# CCD-G100STE

# SERVICE MANUAL

*AEP Model*

CCD-G100STE is almost same as CCD-G100E.
Mainly changed specification is that the audio section is modified to the stereo system.
Therefore, this manual contains only the difference.
Please refer to the CCD-G100E service manual (9-972-935-11) for the related information not contained in this manual.

## SPECIFICATIONS

### System

| | |
|---|---|
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electronic viewfinder (black and white) |
| Lens | Combined 6 x power zoom lens, f=11 – 66 mm,<br>F 2.0 with macro<br>Filter diameter: 37 mm |
| Autofocus system | TTL |
| Colour temperature | AUTO: HOLD, INDOOR (3200K), OUTDOOR (5800K) |
| Minimum illumination | 9 lux (F2.0) |
| Illumination range | 9 lux – 100,000 lux |
| Recommended illumination | More than 300 lux |
| Aperture correction | Automatic |

### Input and output connector

| | |
|---|---|
| CAMERA connector | 12-pin |
| REMOTE ZOOM jack | Stereo minijack |
| MIC jack | Stereo minijack, –66 dBs, low impedance<br>with 2.5 – 3 V DC output, impedance 6.8 kilohms |
| Microphone power output jack | Special minijack, 5 V DC |

– continued on next page –

MICROFILM

# COLOUR VIDEO CAMERA

SONY®

## General

| | |
|---|---|
| Power consumption | 3.5 W |
| Installation | Vertically, horizontally |
| Operating temperature | 0°C to 40°C |
| Storage temperature | –20°C to +60°C |
| Dimensions | Approx. 86.6 × 80 × 227.6 mm (w/h/d) |
| Weight | Approx. 470 g |
| Microphone | Electret condenser microphone, stereo type |

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

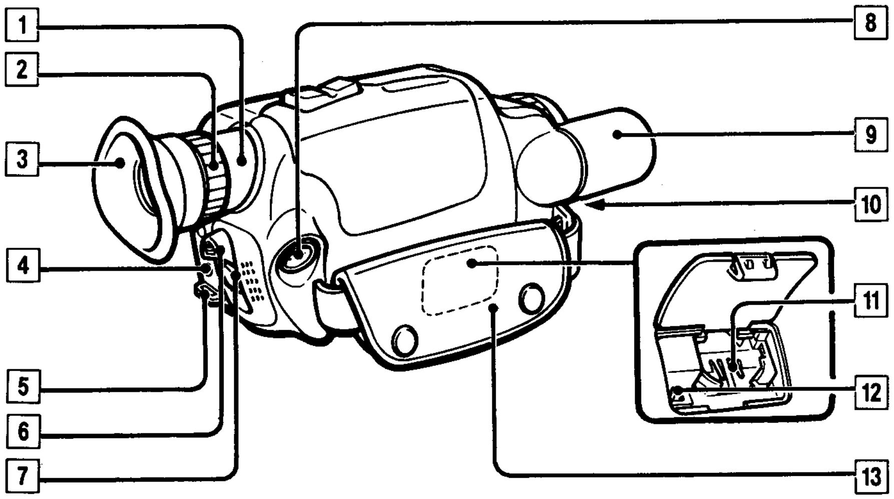
**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

# Identifying the Parts

This section is extracted from instruction manual.

For details on the use of each control, refer to the pages indicated in the circle.



1 **Viewfinder**
The picture being recorded can be monitored in monochrome. Also various mode indications are displayed here.

2 **Viewfinder lens adjustment ring** ⑫

3 **Eyecup**

4 **REMOTE ZOOM connector** ㉗
Connect the supplied Remote Commander for zooming.

5 **Hook for carrying strap**

6 **STANDBY switch**
Slide down when the camera is not in *use to avoid pressing* START/STOP button accidentally.

7 **START/STOP button** ⑭
Press to start and stop recording.

8 **CAMERA connector** (12-pin) ⑥

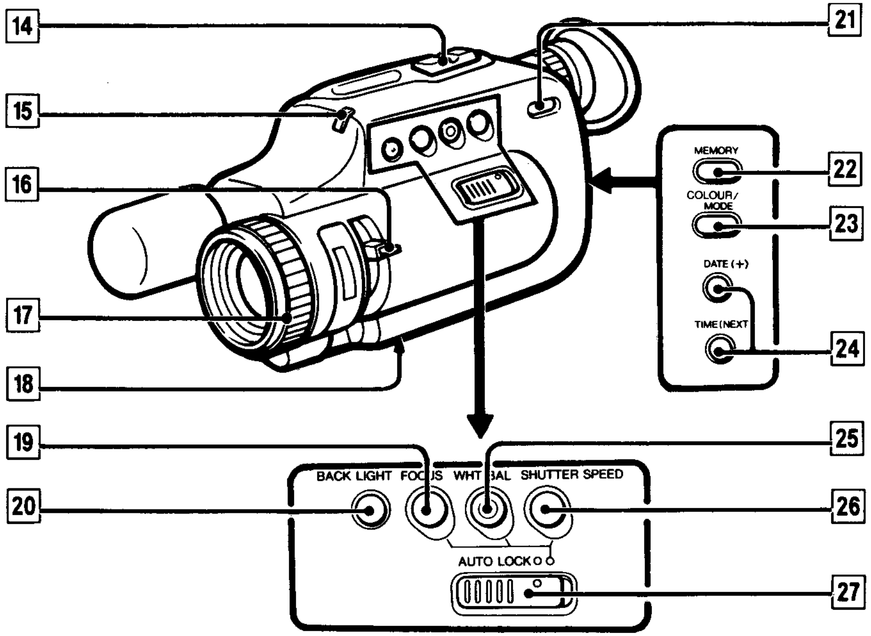
9 **Built-in microphone** (stereo)

10 **MIC jack** (stereo minijack) and **DC OUT** (microphone power output) **jack**
Connect an external microphone. The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them. For attachment of an external microphone, use Sony VCT-55L shoe adaptor (not supplied).

11 **Lithium battery compartment** ⑧

12 **EVF (electronic viewfinder) ON/OFF switch** ⑮

13 **Grip strap** ⑫



14 **Power zoom button** ㉕

15 **Tally lamp**
Lights during recording. Blinks when the battery of the connected video equipment has been exhausted or when the tape has reached its end.

16 **Zoom lever and Macro set button** ㉖ ㉘

17 **Focus ring** ⑲

18 **Tripod receptacle (bottom)**

19 **FOCUS button** ⑲

20 **BACK LIGHT button** ㉓

21 **SUPERIMPOSE ON/OFF button** (31)
Used to record a title.

22 **MEMORY button** (33)

23 **COLOUR/MODE button** ㉙ (32)

24 **DATE (+) button and TIME (NEXT) button** ⑨ ⑮

25 **WHT BAL (white balance) button** ㉑

26 **SHUTTER SPEED button** ㉕

27 **AUTO LOCK switch** ⑪ ⑯
Normally set to the left AUTO LOCK position (green position).

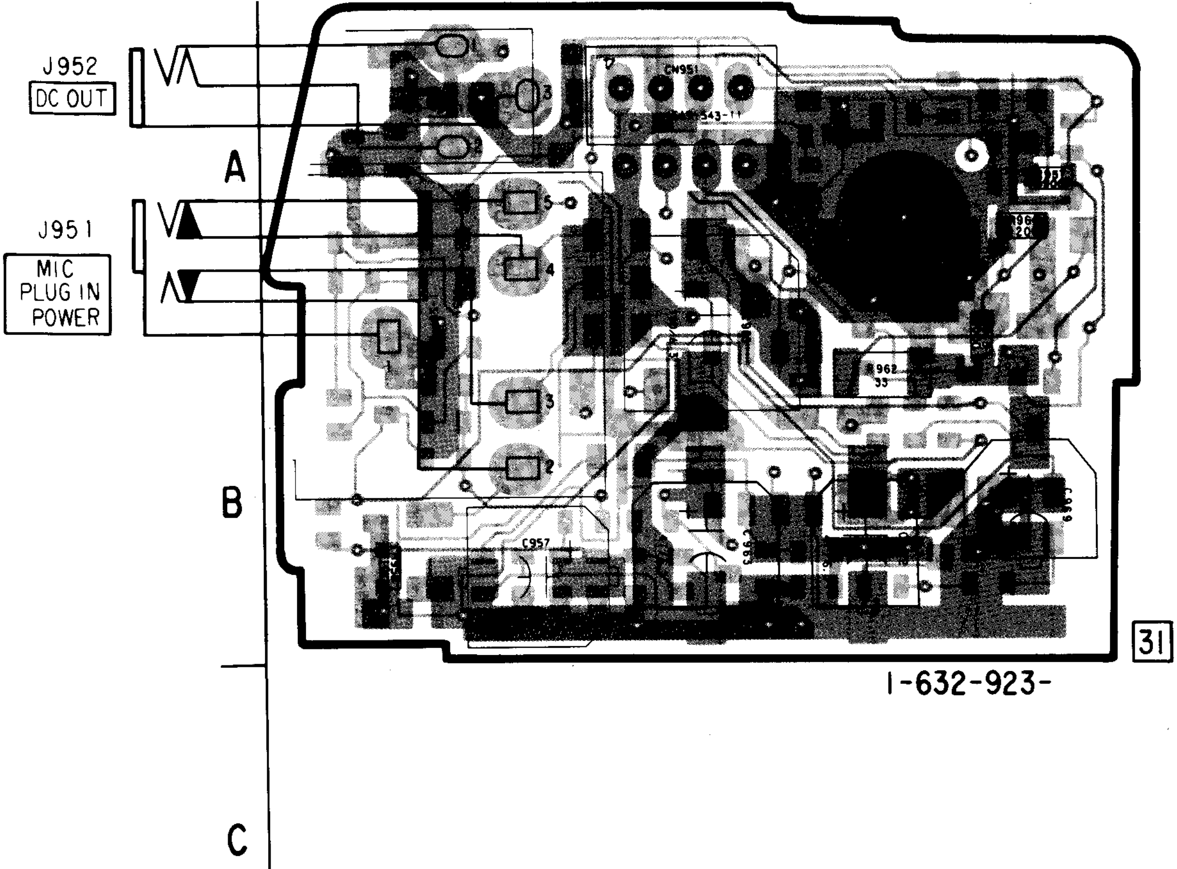
## SECTION 2

## PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

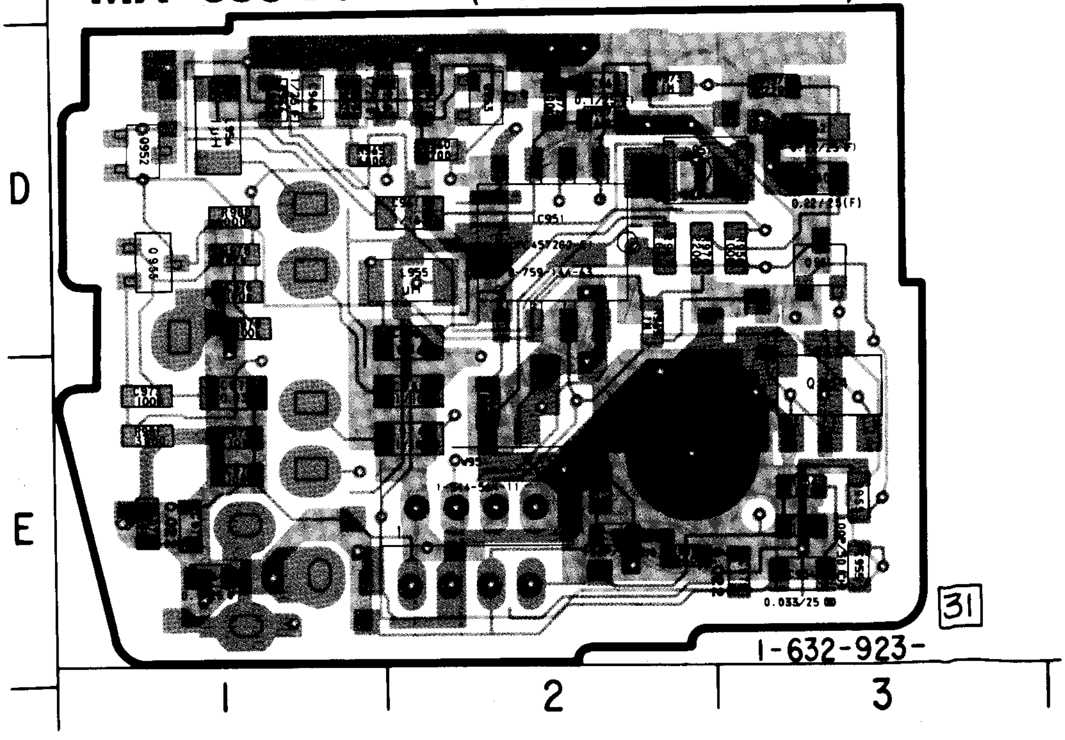
### MA-38S (MIC AMP) PRINTED WIRING BOARD

– Ref. No.: MA-38 board; 2,000 Serieas –

**MA-38S** BOARD (COMPONENT SIDE)

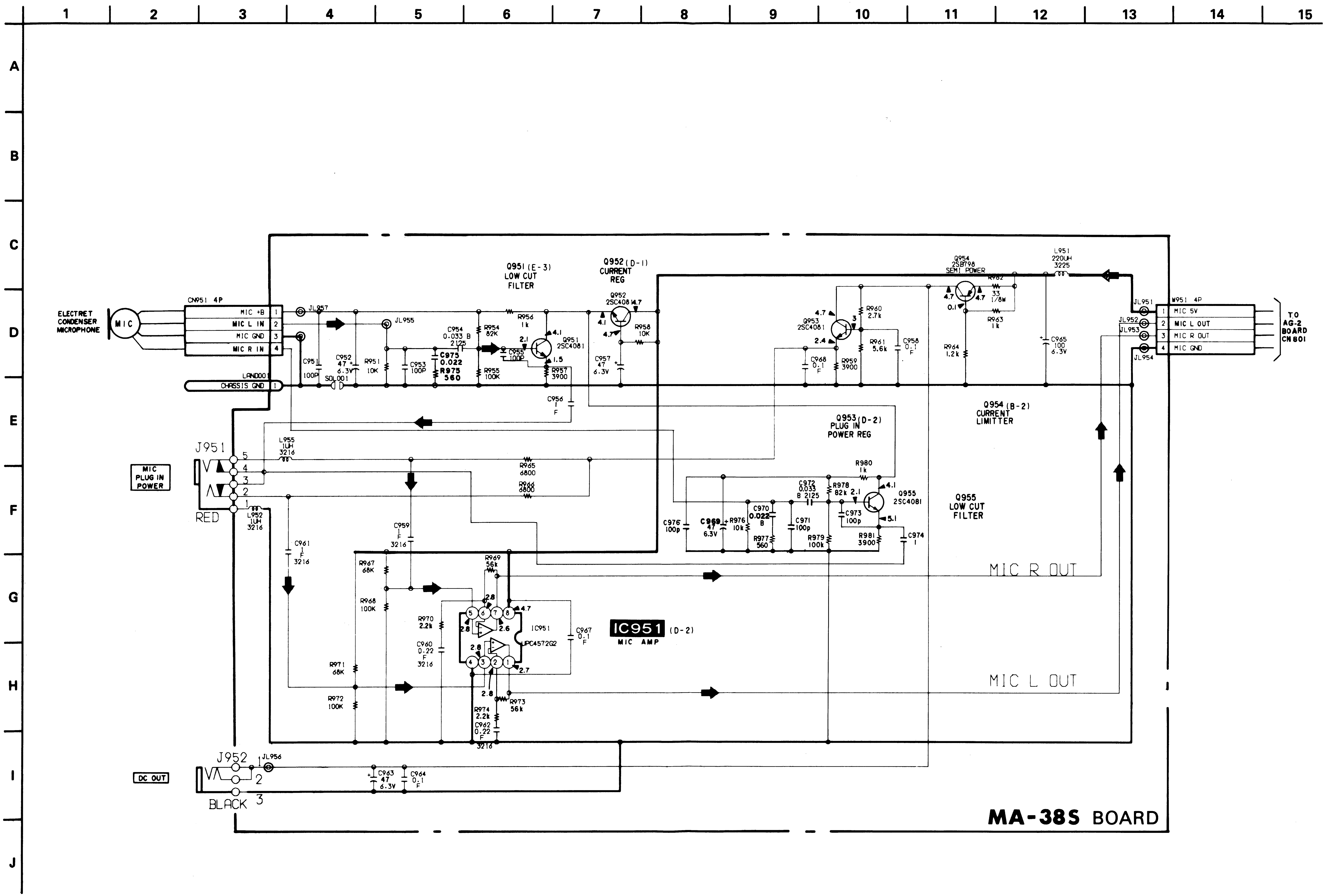

J952
DC OUT
J951
MIC
PLUG IN
POWER
A
B
C
CW951
C957
R962
33
31
1-632-923-

**MA-38S** BOARD (CONDUCTOR SIDE)


D
E
C951
0.022/25(F)
0.033/25
31
1-632-923-
1
2
3

## MA-38S (MIC AMP) SCHEMATIC DIAGRAM

– Ref. No.: MA-38 board; 2,000 Serieas –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A
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D
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F
G
H
I
J
ELECTRET CONDENSER MICROPHONE
MIC
CN951 4P
MIC +B 1
MIC L IN 2
MIC GND 3
MIC R IN 4
LAND001
CHASSIS GND 1
JL957
JL955
C951 100P
C952 47 6.3V
SOL001
R951 10K
C953 100P
C954 0.033 B 2125
C975 0.022
R975 560
R954 82K
R955 100K
R956 1k
C955 100P
Q951 (E-3) LOW CUT FILTER
Q951 2SC4081
R957 3900
C956 1 F
Q952 (D-1) CURRENT REG
Q952 2SC4081
R958 10K
C957 47 6.3V
Q953 2SC4081
R960 2.7k
R961 5.6k
C958 0.1 F
C968 0.1 F
R959 3900
Q954 2SB798 SEMI POWER
R962 33 1/8W
R963 1k
R964 1.2k
L951 220UH 3225
C965 100 6.3V
JL951
JL952
JL953
JL954
W951 4P
1 MIC 5V
2 MIC L OUT
3 MIC R OUT
4 MIC GND
TO AG-2 BOARD CN801
Q954 (B-2) CURRENT LIMITTER
Q953 (D-2) PLUG IN POWER REG
J951
MIC PLUG IN POWER
RED
L955 1UH 3216
L952 1UH 3216
R965 6800
R966 6800
C959 1 F 3216
C961 1 F 3216
R980 1k
C972 0.033 B 2125
R978 82k
Q955 2SC4081
Q955 LOW CUT FILTER
C973 100p
R981 3900
C974 1
C976 100p
C969 47 6.3V
R976 10k
C970 0.022 B
R977 560
C971 100p
R979 100k
R967 68K
R968 100K
R969 56k
R970 2.2k
C960 0.22 F 3216
R971 68K
R972 100K
IC951
μPC4572G2
C967 0.1 F
IC951 (D-2) MIC AMP
R973 56k
R974 2.2k
C962 0.22 F 3216
MIC R OUT
MIC L OUT
J952
JL956
DC OUT
C963 47 6.3V
C964 0.1 F
BLACK
MA-38S BOARD

## SECTION 3
## DIFFERENT PARTS LIST

**NOTE:**

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

※: Page on CCD-G100E Service Manual.

**• Page 109 ※**

### EXPLODED VIEW

| No. | Part No. | Description |
|---|---|---|
| 68 | ★ A-7071-168-A | MA-38S BOARD, COMPLETE |

**• Page 124 ※**

### MISCELLANEOUS

| Ref. No. | Part No. | Description |
|---|---|---|
| | 1-542-149-11 | MICROPHONE, STEREO |
| S951 | 1-572-168-21 | SWICH, PUSH (ZOOM) |

**• Page 124 ※**

### ACCESSORIES AND PACKING MATERIALS

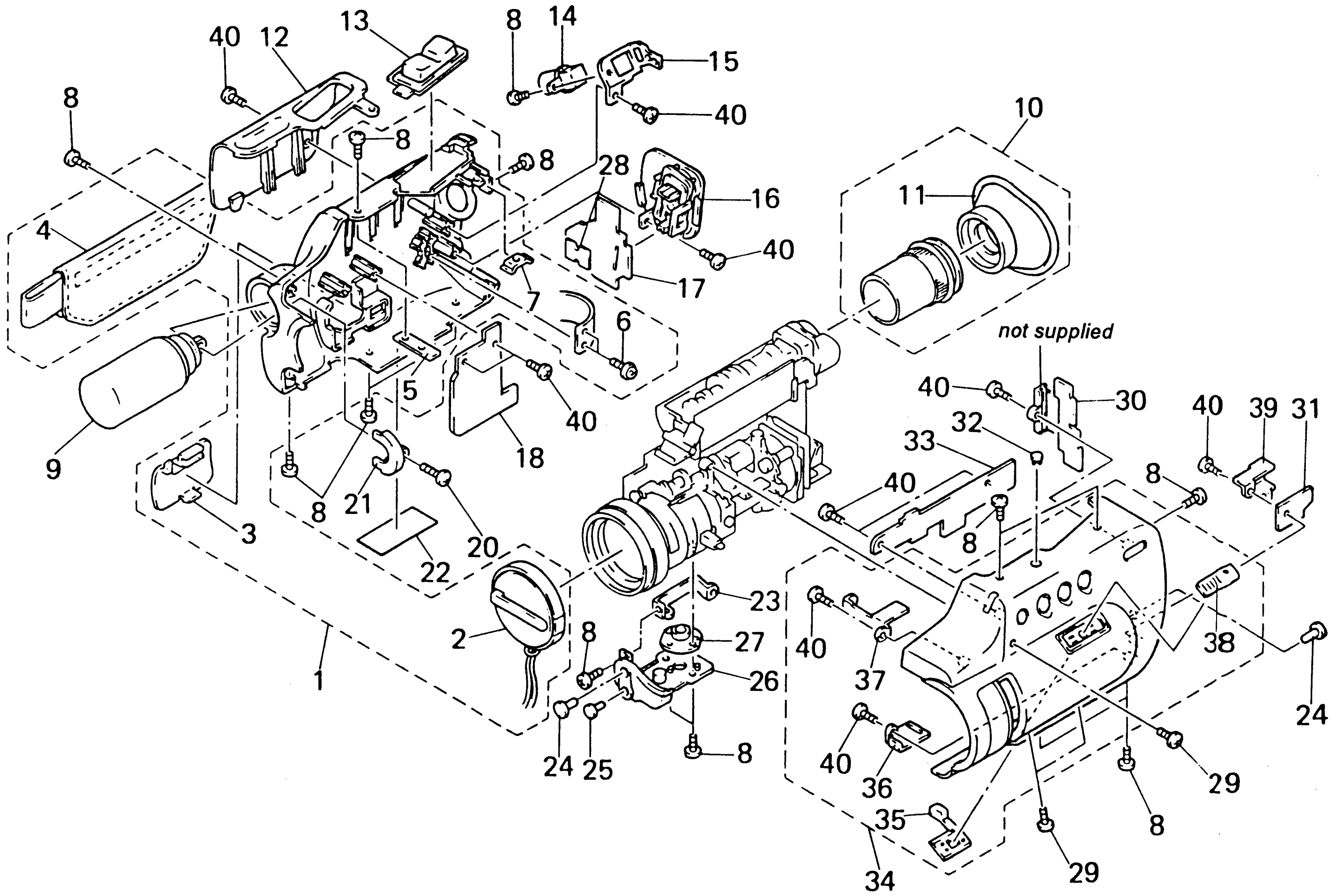
| Part No. | Description |
|---|---|
| ★ 3-741-258-01 | CUSHION (UPPER) |
| ★ 3-741-259-01 | CUSHION (LOWER) |
| ★ 3-741-256-11 | INDIVIDUAL CARTON |
| 3-751-768-11 | MANUAL, INSTRUCTION (ENGLISH) |
| 3-751-768-41 | MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) |
| 3-751-768-51 | MANUAL, INSTRUCTION (SWEDISH, DUTCH, ITALIAN) |

## SECTION 4
## EXPLODED VIEW

**NOTE:**

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

### 4-1. CABINET ASSEMBLY



| No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | A-7081-156-A | CABINET (L) BLOCK ASSY | 2-8 |
| 2 | A-7091-015-B | CAP ASSY, LENS | |
| 3 | 3-741-222-11 | LID, BATTERY CASE | |
| 4 | 3-736-807-01 | BELT, GRIP | |
| 5 | 3-741-211-01 | NUT (D), PLATE | |
| 6 | 3-669-480-21 | + PTPWH 2 | |
| 7 | 3-741-205-01 | NUT (A), PLATE | |
| 8 | 3-719-381-01 | SCREW (M2X4) | |
| 9 | 1-542-149-11 | MICROPHONE, STEREO | |
| 10 | A-7081-155-A | FINDER BLOCK ASSY | 11 |
| 11 | 3-733-922-01 | EYE CUP | |
| 12 | 3-741-226-31 | COVER, ZOOM BUTTON | |
| 13 | 1-572-168-21 | SWITCH, PUSH (ZOOM) (S951) | |
| 14 | 1-575-245-11 | CORD, CONNECTION | |
| 15 | *3-741-202-01 | BRACKET, CAMERA CONNECTOR | |
| 16 | X-3741-212-1 | BUTTON ASSY, S/S | |
| 17 | *1-632-926-11 | ST-28 BOARD | |
| 18 | *1-632-927-11 | LI-15 BOARD | |
| 20 | 2-370-905-41 | SCREW (B) (2X10), TAPPING | |
| 21 | 3-747-376-01 | HOLDER, MICROPHONE | |
| 22 | *3-940-429-01 | LABEL, MODEL NUMBER (AEP) | |
| 23 | 3-741-237-01 | NUT (L), PLATE | |
| 24 | 3-728-267-01 | COVER, 3.5 JACK (MIC/REMOTE ZOOM) | |
| 25 | 3-728-266-01 | COVER, 2.5 JACK (DC OUT) | |
| 26 | 3-741-218-21 | CABINET (FRONT) | |
| 27 | 3-716-454-01 | SCREW, TRIPOD | |
| 28 | *3-741-243-01 | REINFORCEMENT, ST | |
| 29 | 3-719-408-01 | SCREW (B2), TAPPING, P3 | |
| 30 | *1-632-929-11 | FK-17 BOARD | |
| 31 | *1-632-924-21 | JK-48 BOARD | |
| 32 | 3-741-201-11 | BLIND, VR | |
| 33 | *1-632-928-11 | FK-13 BOARD | |
| 34 | X-3940-082-1 | CABINET (R) ASSY | 35-38, 40 |
| 35 | 3-741-204-01 | BASE, KNOB, AUTO LOCK | |
| 36 | 3-741-210-01 | BRACKET, BELT | |
| 37 | 3-741-238-01 | NUT (Z), PLATE | |
| 38 | 3-741-203-11 | KNOB, AUTO LOCK | |
| 39 | 3-741-239-01 | REINFORCEMENT, JK | |
| 40 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |

# SECTION 5
# ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *A-7071-168-A | MA-38S BOARD, COMPLETE<br>*********************** | |

CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C951 | 1-162-927-11 | CERAMIC CHIP 100PF 5% | 50V |
| C952 | 1-126-205-11 | ELECT CHIP 47MF 20% | 6.3V |
| C953 | 1-162-927-11 | CERAMIC CHIP 100PF 5% | 50V |
| C954 | 1-163-989-11 | CERAMIC CHIP 0.033MF 10% | 25V |
| C955 | 1-162-927-11 | CERAMIC CHIP 100PF 5% | 50V |
| C956 | 1-164-634-11 | CERAMIC CHIP 1MF | 16V |
| C957 | 1-126-205-11 | ELECT CHIP 47MF 20% | 6.3V |
| C958 | 1-164-156-11 | CERAMIC CHIP 0.1MF | 25V |
| C959 | 1-164-634-11 | CERAMIC CHIP 1MF | 16V |
| C960 | 1-164-222-11 | CERAMIC CHIP 0.22MF | 25V |
| C961 | 1-164-634-11 | CERAMIC CHIP 1MF | 16V |
| C962 | 1-164-222-11 | CERAMIC CHIP 0.22MF | 25V |
| C963 | 1-126-205-11 | ELECT CHIP 47MF 20% | 6.3V |
| C964 | 1-164-156-11 | CERAMIC CHIP 0.1MF | 25V |
| C965 | 1-126-206-11 | ELECT CHIP 100MF 20% | 6.3V |
| C967 | 1-164-156-11 | CERAMIC CHIP 0.1MF | 25V |
| C968 | 1-164-156-11 | CERAMIC CHIP 0.1MF | 25V |
| C969 | 1-126-205-11 | ELECT CHIP 47MF 20% | 6.3V |
| C970 | 1-164-227-11 | CERAMIC CHIP 0.022MF 10% | 25V |
| C971 | 1-162-927-11 | CERAMIC CHIP 100PF 5% | 50V |
| C972 | 1-163-989-11 | CERAMIC CHIP 0.033MF 10% | 25V |
| C973 | 1-162-927-11 | CERAMIC CHIP 100PF 5% | 50V |
| C974 | 1-164-634-11 | CERAMIC CHIP 1MF | 16V |
| C975 | 1-164-227-11 | CERAMIC CHIP 0.022MF 10% | 25V |
| C976 | 1-162-927-11 | CERAMIC CHIP 100PF 5% | 50V |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN951 | *1-565-543-11 | PIN, CONNECTOR (PC BOARD) 4P | |

IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC951 | 8-759-111-56 | IC UPC4572G2 | |

JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J951 | 1-507-899-00 | JACK (SMALL TYPE) (MIC PLUG IN POWER) | |
| J952 | 1-563-454-11 | JACK, MINIATURE (DC OUT) | |

COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L951 | 1-410-658-31 | INDUCTOR CHIP 220UH | |
| L955 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L956 | 1-410-192-51 | INDUCTOR CHIP 1UH | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q951 | 8-729-905-35 | TRANSISTOR 2SC4081R | |
| Q952 | 8-729-905-35 | TRANSISTOR 2SC4081R | |
| Q953 | 8-729-905-35 | TRANSISTOR 2SC4081R | |
| Q954 | 8-729-101-07 | TRANSISTOR 2SB798-DL | |
| Q955 | 8-729-905-35 | TRANSISTOR 2SC4081R | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R951 | 1-216-833-11 | METAL GLAZE 10K 5% | 1/16W |
| R954 | 1-216-844-11 | METAL GLAZE 82K 5% | 1/16W |
| R955 | 1-216-845-11 | METAL GLAZE 100K 5% | 1/16W |
| R956 | 1-216-821-11 | METAL GLAZE 1K 5% | 1/16W |
| R957 | 1-216-828-11 | METAL GLAZE 3.9K 5% | 1/16W |
| R958 | 1-216-833-11 | METAL GLAZE 10K 5% | 1/16W |
| R959 | 1-216-828-11 | METAL GLAZE 3.9K 5% | 1/16W |
| R960 | 1-216-826-11 | METAL GLAZE 2.7K 5% | 1/16W |
| R961 | 1-216-830-11 | METAL GLAZE 5.6K 5% | 1/16W |
| R962 | 1-216-162-00 | METAL GLAZE 33 5% | 1/8W |
| R963 | 1-216-821-11 | METAL GLAZE 1K 5% | 1/16W |
| R964 | 1-216-822-11 | METAL GLAZE 1.2K 5% | 1/16W |
| R965 | 1-216-831-11 | METAL GLAZE 6.8K 5% | 1/16W |
| R966 | 1-216-831-11 | METAL GLAZE 6.8K 5% | 1/16W |
| R967 | 1-216-843-11 | METAL GLAZE 68K 5% | 1/16W |
| R968 | 1-216-845-11 | METAL GLAZE 100K 5% | 1/16W |
| R969 | 1-216-842-11 | METAL GLAZE 56K 5% | 1/16W |
| R970 | 1-216-825-11 | METAL GLAZE 2.2K 5% | 1/16W |
| R971 | 1-216-843-11 | METAL GLAZE 68K 5% | 1/16W |
| R972 | 1-216-845-11 | METAL GLAZE 100K 5% | 1/16W |
| R973 | 1-216-842-11 | METAL GLAZE 56K 5% | 1/16W |
| R974 | 1-216-825-11 | METAL GLAZE 2.2K 5% | 1/16W |
| R975 | 1-216-818-11 | METAL GLAZE 560 5% | 1/16W |
| R976 | 1-216-833-11 | METAL GLAZE 10K 5% | 1/16W |
| R977 | 1-216-818-11 | METAL GLAZE 560 5% | 1/16W |
| R978 | 1-216-844-11 | METAL GLAZE 82K 5% | 1/16W |
| R979 | 1-216-845-11 | METAL GLAZE 100K 5% | 1/16W |
| R980 | 1-216-821-11 | METAL GLAZE 1K 5% | 1/16W |
| R981 | 1-216-828-11 | METAL GLAZE 3.9K 5% | 1/16W |

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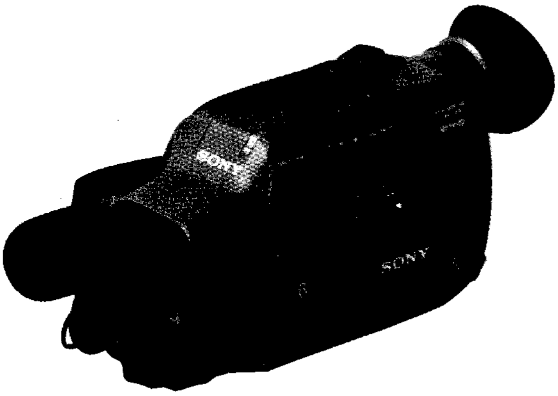
# CCD-G100E

# SERVICE MANUAL

*AEP Model*



## SPECIFICATIONS

### System

| | |
|---|---|
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electronic viewfinder (black and white) |
| Lens | Combined 6 x power zoom lens, f=11 – 66 mm,<br>F 2.0 with macro<br>Filter diameter: 37 mm |
| Auto focus system | TTL |
| Colour temperature | AUTO: HOLD, INDOOR (3200K), OUTDOOR (5800K) |
| Minimum illumination | 9 lux (F2.0) |
| Illumination range | 9 lux – 100,000 lux |
| Recommended illumination | More than 300 lux |
| Aperture correction | Automatic |

### Input and output connector

| | |
|---|---|
| CAMERA connector | 12-pin |
| REMOTE ZOOM jack | Stereo minijack |
| MIC jack | Stereo minijack, –66 dBs, low impedance<br>with 2.5 – 3 V DC output, impedance 6.8 kilohms |
| Microphone power output jack | Special minijack, 5 V DC |

### General

| | |
|---|---|
| Power consumption | 3.5 W |
| Installation | Vertically, horizontally |
| Operating temperature | 0°C to 40°C |
| Storage temperature | –20°C to +60°C |
| Dimensions | Approx. 86.6 × 80 × 209.6 mm (w/h/d)<br>(3 1/2 × 3 1/4 × 8 3/8 inches) |
| Weight | Approx. 455 g (1 lb.) |
| Microphone | Electret condenser microphone,<br>omni-directional monaural type |

Design and specifications are subject to change without notice.

MICROFILM

# COLOUR VIDEO CAMERA

SONY®

## Overview of the CCD-G100E

The CCD-G100E is a compact colour video camera for use with the Sony GV-8E/9E Video Walkman or other VTR using the Sony HVA-G1E AC power adaptor. (The HVA-G1E is not available in the United Kingdom.)
The CCD-G100E has the following features.

- x6 power zooming with Macro function
- Six shutter speeds selectable, from 1/50 to 1/4000
- Date or time superimposing
- Title superimposing, title scrolling or title reverse mode
- TTL system auto focusing

## Supplied Accessories

The video camera is packed together with the following units. Check to see that everything is contained in the package. (*Attached to the camera)

Camera connecting cable (1)
Carrying strap (1)
Lithium battery (1)
Remote Commander for zooming (1)
Lens cap (1)*
Jack cover (1 set)*
European guarantee certificates (1)

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
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5. Check the B+ voltage to see it is at the values specified.

**SAFETY-RELATED COMPONENT WARNING!!**

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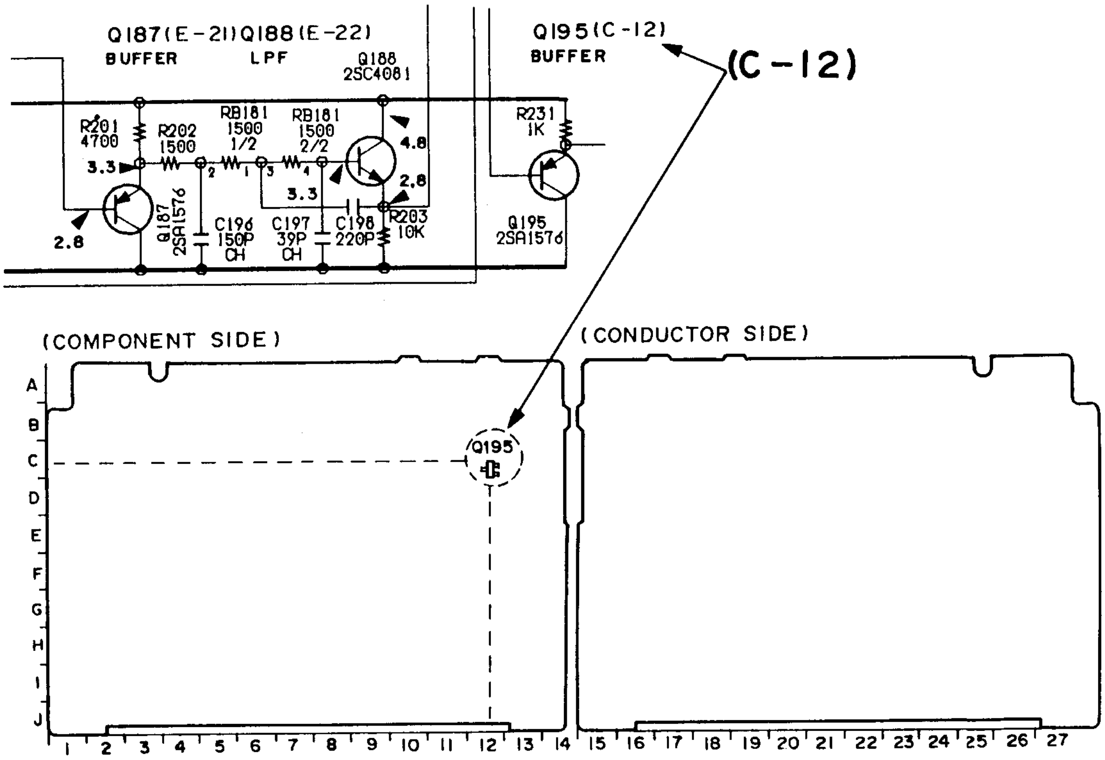
## [SERVICE NOTE]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red sa shown below. This enables to find the location on the board easily when servicing.



Q187(E-21)Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
2.8
4.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
1
2
3
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6
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15
16
17
18
19
20
21
22
23
24
25
26
27

## TABLE OF CONTENTS

*Section* *Title* *Page*

SERVICE NOTE ... 3

### 1. GENERAL

Identifying the Parts ... 6
Preparations ... 7
Basic Operation ... 11
Advanced Operation ... 12

### 2. DISASSEMBLY

2-1. Removal of Cabinet (R) Assembly ... 23
2-2. Removal of Cabinet (L) Assembly ... 23
2-3. Removal of EVF Assembly ... 24
2-4. Removal of Transformer Unit and IN-25 Baord ... 24
2-5. Removal of MA-38P Board and Frame (Lower) ... 24
2-6. Removal of Lens Assembly and VC-66P, DI-24P Board ... 25
2-7. Removal of LD-20P Board ... 25
2-8. Removal of Motor Assembly, AF/Z Gear ... 25
2-9. Removal of CCD Assembly and Filter Block, Optical ... 25

### 3. DIAGRAM

3-1. Circuit Board Location ... 26
3-2. Overall Block Diagram ... 27
3-3. Camera Block Diagram ... 32
3-4. Auto-Focus Block Diagram ... 37
3-5. Digital Titler Block Diagram ... 40
3-6. System Control Section Function Description ... 43
  3-6-1. DDS microcomputer µPD7508BGB (IC561 on DI-24P Board) ... 43
  3-6-2. EVR microcomputer MC68HC05N4FU (IC361 on VC-66P Board) ... 45
  3-6-3. AF microcomputer MC68HC05C4FU (IC613 on VC-66P Board) ... 47
3-7. Interface Block Diagram ... 50
3-8. View Finder Block Diagram ... 53

### 4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. Frame Schematic Diagram ... 57
4-2. Printed Wiring Boards and Schematic Diagrams ... 60
  VC-66P, CD-19P, LD-20 Boards ... 62
  DI-24P, TI-20P Boards ... 80
  IN-25, JK-48P, LI-15, MA-38P, ST-28, AG-2 Boards ... 88
  FK-13, FK-17 Boards ... 96
  VF-15P, TL-22P, TL-23P Boards ... 101
  DT-74D Board ... 105
4-3. Semiconductors ... 107

### 5. EXPLODED VIEWS

5-1. Cabinet Assembly ... 108
5-2. Chassis Assembly ... 109
5-3. Lens Assembly ... 110

*Section* *Title* *Page*

### 6. ELECTRICAL PARTS LIST

LD-20P Board ... 111
VF-15P, TL-22P, TL-23P Boards ... 112
VC-66P Board ... 113
DI-24P Board ... 117
TI-20P, IN-25 Boards ... 120
CD-19P Board ... 121
MA-38P, ST-28 Boards ... 122
LI-15, FK-13, FK-17, JK-48P, AG-2 Boards ... 123

### 7. ELECTRICAL ADJUSTMENTS

7-1. Pre-Adjustment Preparations ... 125
  7-1-1. List of Servicing jigs ... 125
  7-1-2. Preparation ... 126
  7-1-3. Precautions ... 128
  7-1-4. Adjustment Remote Controller ... 129
  7-1-5. Check Point Array ... 134
  7-1-6. AF Microprocessor Data Reading Jig ... 134
  7-1-7. Sata Processing ... 135
7-2. Camera System Adjustment ... 136
  7-2-1. Flange Back Adjustment ... 136
  7-2-2. Power Supply Check ... 137
  7-2-3. EVR Initial Settings ... 137
  7-2-4. V SUB Adjustment ... 138
  7-2-5. PLL Adjustment ... 138
  7-2-6. Hall Adjustment ... 138
  7-2-7. Iris Adjustment ... 139
  7-2-8. Iris In/Out Adjustment ... 139
  7-2-9. AGC Adjustment ... 140
  7-2-10. Y Signal Matrix Adjustment ... 140
  7-2-11. Chroma Signal Matrix Adjustment (1) ... 141
  7-2-12. Chroma Signal Matrix Adjustment (2) ... 141
  7-2-13. YH Level Adjustment ... 142
  7-2-14. Sync Level Adjustment ... 142
  7-2-15. Setup Adjustment ... 142
  7-2-16. Y Level Adjustment ... 143
  7-2-17. White Clip Adjustment ... 143
  7-2-18. Aperture Adjustment ... 144
  7-2-19. Max. Gain Adjustment ... 144
  7-2-20. Chroma Level Adjustment ... 145
  7-2-21. Burst Level Adjustment ... 145
  7-2-22. Indoor White Balance Adjustment (Method Using Vectrscope) ... 146
  7-2-23. Indoor White Balance Adjustment (Method Using Oscilloscope) ... 146
  7-2-24. Color Reproduction Adjustment (Method Using Vectorscope) ... 147
  7-2-25. Color Reproduction Adjustment (Method Using Oscilloscope) ... 147

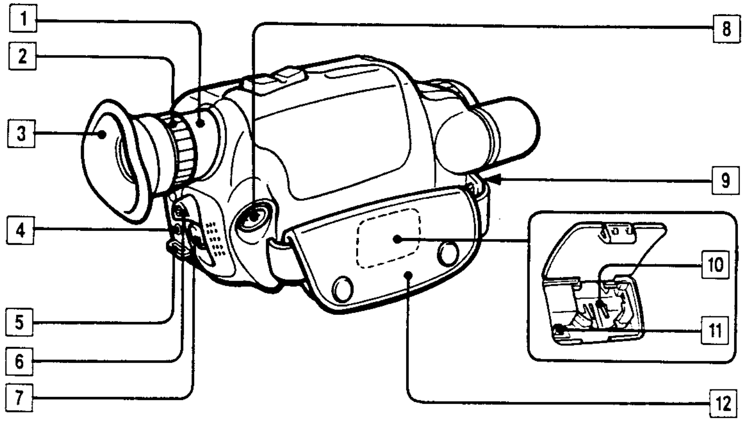
*Section* *Title* *Page*

7-2-26. Auto White Balance Adjustment ················ 148
7-2-27. Outdoor White Balance Confirmation ··········· 151
7-2-28. Focus Motor Speed Adjustment ················ 151
7-2-29. Macro Area Adjustment ······················· 151
7-2-30. Auto-Focus LLA Adjustment ··················· 152
7-2-31. Auto-Focus Adjustment ······················· 152
7-2-32. Auto-Focus Confirmation ····················· 152
7-3. Digital Titler System Adjustment ···················· 153
7-3-1. Titler PLL Adjustment ························ 153
7-3-2. CG Clock Adjustment ························· 153
7-3-3. Title A/D Level Adjustment ···················· 153
7-3-4. Title Pedestal Adjustment ····················· 154
7-3-5. Title Y Level Adjustment ······················ 154
7-4. System Control System Adjustment ················ 155
7-4-1. System Clock Adjustment ····················· 155
7-4-2. Clock Precision Adjustment ···················· 155
7-5. Electronic Viewfinder System Adjustment ··········· 155
7-5-1. Preparations ································· 155
7-5-2. Horizontal Tilt Adjustment ···················· 156
7-5-3. Centering Adjustment ························ 156
7-5-4. AFC Adjustment ····························· 157
7-5-5. Focus Adjustment ···························· 157
7-5-6. Horizontal Amplitude Adjustment ··············· 157
7-5-7. Vertical Amplitude Adjustment ················· 158
7-5-8. Brightness, Contrast Adjustment ··············· 158
7-6. Arrangement Diagram for Adjustment Parts ·········· 160

This section is extracted from instruction manual.

# Identifying the Parts

For details on the use of each control, refer to the pages indicated in the circle.



**1 Viewfinder**
The picture being recorded can be monitored in monochrome. Also various mode indications are displayed here.

**2 Viewfinder lens adjustment ring** ⑫

**3 Eyecup**

**4 REMOTE ZOOM connector** ㉗
Connect the supplied Remote Commander for zooming.

**5 Hook for carrying strap**

**6 STANDBY switch**
Slide down when the camera is not in use to avoid pressing START/STOP button accidentally.

**7 START/STOP button** ⑭
Press to start and stop recording.

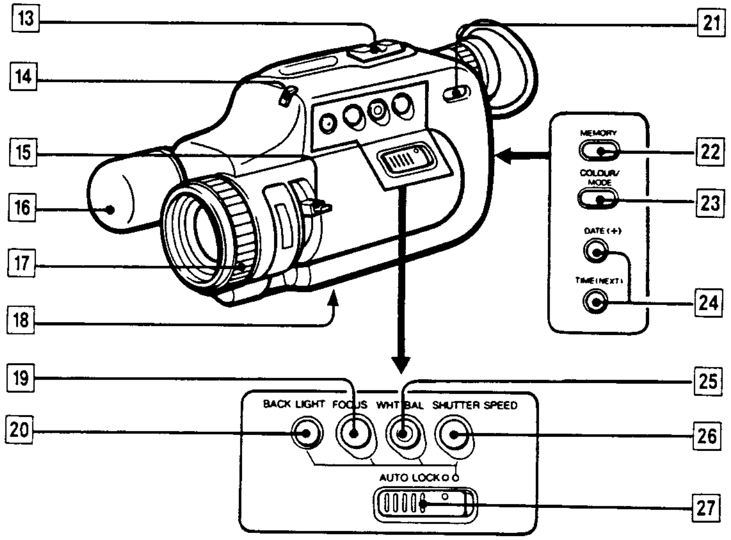
**8 CAMERA connector** (12-pin) ⑥

**9 MIC jack** (stereo minijack) and **DC OUT** (microphone power output) **jack**
Connect an external microphone. The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them. For attachment of an external microphone, use Sony VCT-55L shoe adaptor (not supplied).

**10 Lithium battery compartment** ⑧

**11 EVF (electronic viewfinder) ON/OFF switch** ⑮

**12 Grip strap** ⑫



**13 Power zoom button** ㉖

**14 Tally lamp**
Lights during recording. Blinks when the battery of the connected video equipment has been exhausted or when the tape has reached its end.

**15 Zoom lever and Macro set button** ㉖ ㉘

**16 Microphone** (monaural)

**17 Focus ring** ⑲

**18 Tripod receptacle (bottom)**

**19 FOCUS button** ⑲

**20 BACK LIGHT button** ㉓

**21 SUPERIMPOSE button** ㉛
Used to record a title.

**22 MEMORY button** ㉚

**23 COLOUR/MODE button** ㉙ ㉜

**24 DATE (+) button and TIME (NEXT) button** ⑨

**25 WHT BAL (white balance) button** ㉑

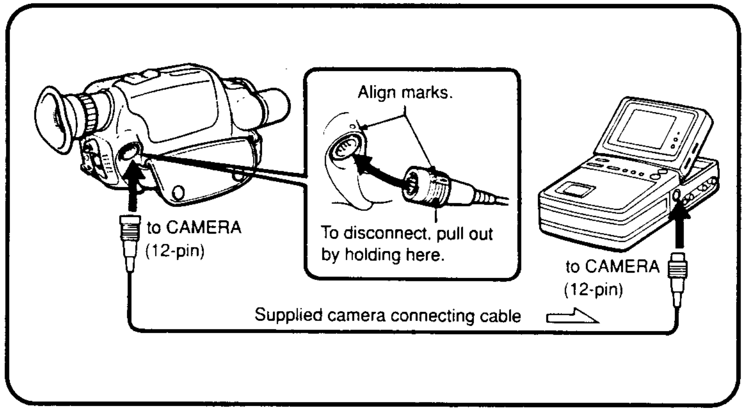
**26 SHUTTER SPEED button** ㉕

**27 AUTO LOCK switch** ⑯
Normally set to the left AUTO LOCK position (green position).

# Connecting Video Equipment

The CCD-G100E can be connected to
- video equipment such as a Video Walkman equipped with a 12-pin connector using a single cable.
- video equipment not equipped with a 12-pin connector using the optional HVA-G1E AC power adaptor.

## Connecting the GV-8E/9E Video Walkman

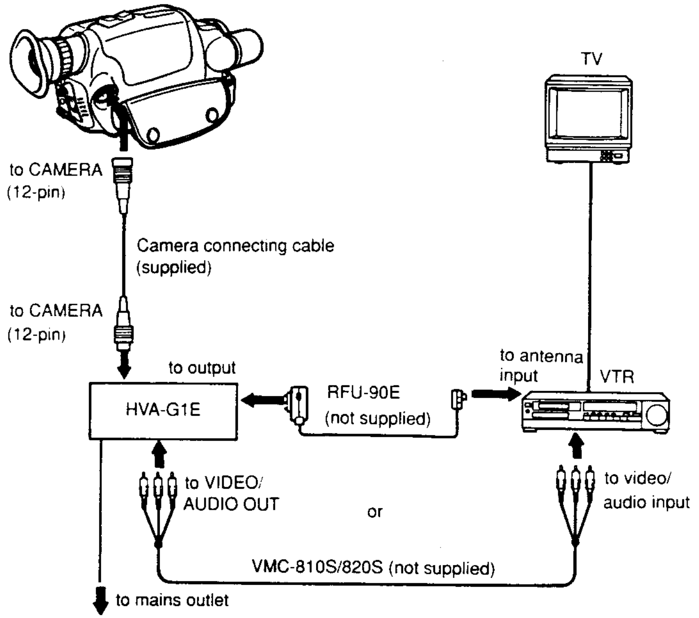

Align marks.
To disconnect, pull out by holding here.
to CAMERA (12-pin)
to CAMERA (12-pin)
Supplied camera connecting cable

**Note on connection with the GV-8E/9E**
The power will not be supplied to the CCD-G100E while the GV-8E/9E is in fast-forward or rewind mode. The power will be supplied again when fast-forward or rewind mode is stopped.

**Notes on connections**
- Before connecting, turn off the power of the equipment to be used. Note that some video equipment may start recording if it is set to the recording pause mode when the camera is connected.
- When the camera cable is extended with an extension cable, check the picture quality in a trial recording.

## Connecting a VTR Not Equipped with a 12-pin Camera Connector And a TV

Use the optional HVA-G1E AC power adaptor. When connecting a VTR without an input selector, the RFU-90E RFU adaptor (not supplied) is required.

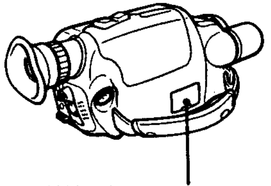

TV
to CAMERA (12-pin)
Camera connecting cable (supplied)
to CAMERA (12-pin)
to output
HVA-G1E
RFU-90E (not supplied)
to antenna input
VTR
to VIDEO/ AUDIO OUT
or
to video/ audio input
VMC-810S/820S (not supplied)
to mains outlet

- For details on the connection, please refer to the instruction manual of the HVA-G1E AC power adaptor.
- Even if the connected VTR is a stereo type, the sound is recorded in manaural.

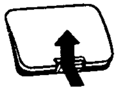
**For customers in the United Kingdom**
The HVA-G1E AC power adaptor is not available in the United Kingdom.
For connection, consult your Sony service facility.

# Installing a Lithium Battery

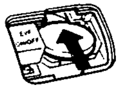
Install the supplied lithium battery to activate the clock and keep a title in memory.



**1** **Open the cover of the lithium battery compartment.**



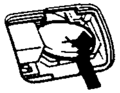
**2** **Insert the supplied CR2025 lithium battery with the + side facing out.**



**Close the cover.**

**To remove the lithium battery**

Press the side of the battery and lift it.



**Notes on lithium battery life**

The battery will last for approximately 1 year in normal operation.
When the lithium battery becomes weak, the time indication on the viewfinder screen blinks for 5 seconds if the power for the video camera is supplied from the connected video equipment.
In this case, **replace the battery with a Sony CR2025 or a battery with one of the same type and rating.**
After replacing the battery, readjust the date and time and titles. (If the battery is replaced with the power supplied to the camera, the readjustments are not necessary.)

**Cautions**

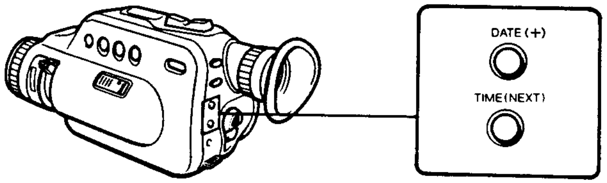
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Battery may explode if mistreated.
  Do not recharge, disassemble or dispose of it in fire.

# Setting the Date and Time

**Before setting**

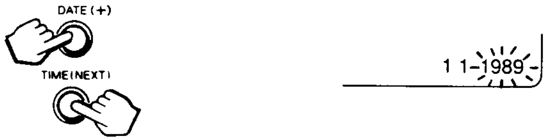
- Connect video equipment and supply the power to the camera. (See pages 6 and 7.)
- Install the supplied lithium battery. (See page 8.)

## Setting the Date And Time

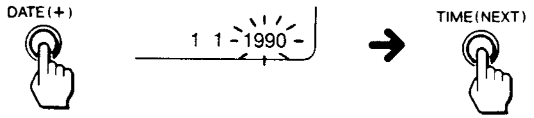


Date or time indication appears in the viewfinder.

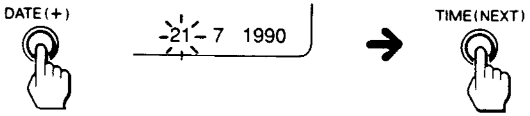
**1** **Press DATE (+) and TIME (NEXT) simultaneously for more than 3 seconds until the year indication blinks.**



**2** **Set the year.**
Adjust the blinking digits with DATE (+) and then press TIME (NEXT).

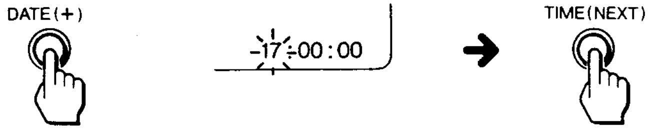


**3** **Set the month and day.**
Adjust the blinking digits with DATE (+) and then press TIME (NEXT).

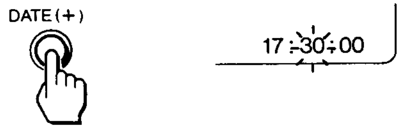


(continued)

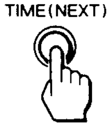
**4** **Set the hour.**
Adjust the blinking digits with DATE (+) and then press TIME (NEXT).



**5** **Set the minute.**
Adjust the blinking digits with DATE (+) button.



**6** **Press TIME (NEXT) at the same time with an announced time signal.**



The clock starts operating.

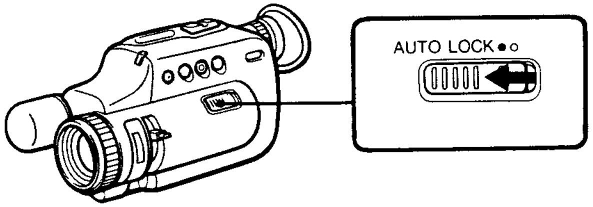
**To readjust the date or time**
Repeat the above procedure from step 1.

**To advance the digits faster**
Keep DATE (+) pressed.

**To check the preset date or time**
When the power for the video camera is supplied from the connected video equipment, press DATE (+) to check the date and press TIME (NEXT) to check the time.

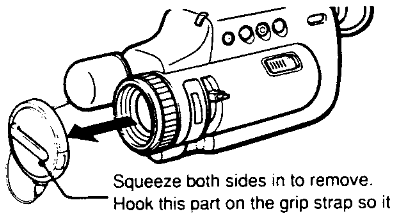
# Before You Start Recording

**1** **Set AUTO LOCK to AUTO LOCK (green position).**
The white balance, shutter speed (1/50 normal speed) and focus are adjusted automatically.



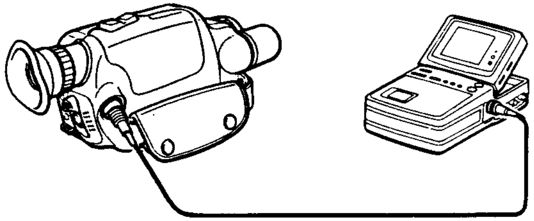
- If you want to use manual adjustments, see pages 16 to 25.

**2** **Remove the lens cap.**



Squeeze both sides in to remove.
Hook this part on the grip strap so it will not get lost.

**3** **Connect video equipment and turn on its power.**

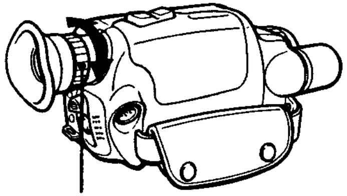


(continued)

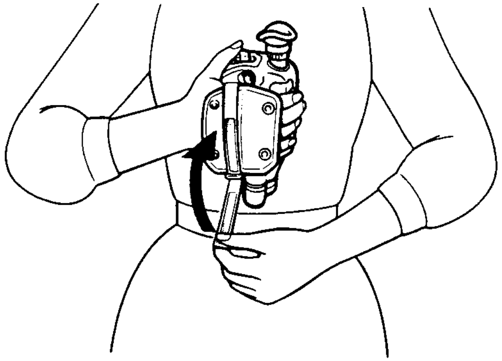
**4** **Adjust the position of the viewfinder lens.**
The position of the viewfinder lens for optimum vision varies depending on the person.

This adjustment is necessary
- for your initial use.
- for use after someone else.

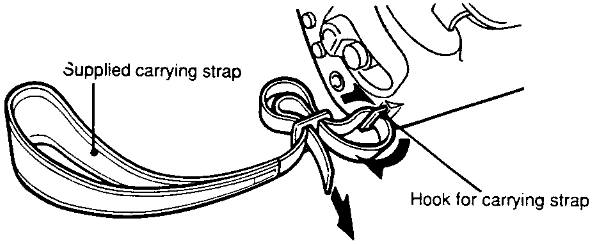
**Turn the viewfinder lens adjustment ring so that the subject on the viewfinder screen comes into sharp focus.**


Viewfinder lens adjustment ring

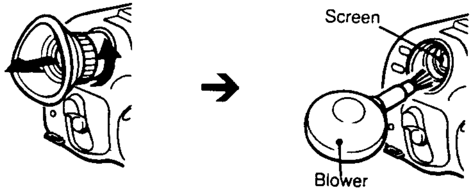
**5** **Adjust the grip strap**
Hold the camera against you as illustrated, adjust the length so that your thumb can easily manipulate the START/STOP button, and then secure the grip strap.



**To attach the supplied carrying strap**

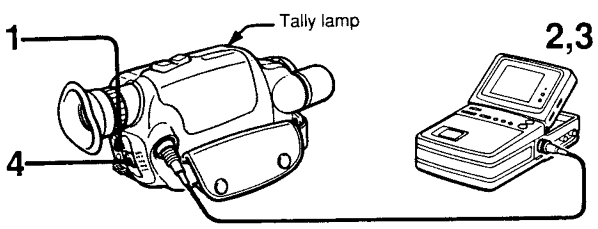

Supplied carrying strap
Hook for carrying strap

**To remove dust from inside the viewfinder**
Detach the eyecup and clean the surface of the screen with a blower.


Screen
Blower

# Recording a Picture Using Automatic Adjust-ments

Make sure the preparations on pages 6 through 13 are completed.

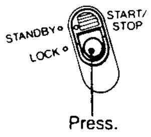


**1** Slide STANDBY up to expose the START/STOP button.

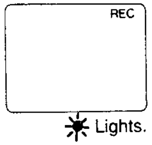
**2** Turn on the power of the connected video equipment and set the input selector to CAMERA.

**3** Insert a cassette into the video equipment and set it to recording pause mode.

**4** Press START/STOP on the video camera.



Viewfinder



- The tally lamp on the camera also lights.

**To pause (to stop momentalily)**
Press START/STOP again.
The tally lamps in the viewfinder and on the camera go off.
Press the button again to resume recording.

**To stop**
Press the stop button on the video equipment. Turn off the power of the video equipment.

**Notes on recording**

- The STANDBY switch on the video camera does not function.
- Do not turn or stop the focus ring forcibly.
- In some video equipment the tally lamp in the viewfinder may blink and then remain lit when recording starts. The REC indicator does not appear during blinking.
- If the tally lamp in the viewfinder continues blinking, the battery of the connected video equipment is exhausted or the tape has reached its end. As the recorded picture may be distorted when the battery becomes weak, replace with a new battery at the earliest indication of battery exhaustion.
- When you record while monitoring the pictures and sound being recorded on a monitor with speakers, lower the volume or connect the headphones. Otherwise, the sound from the speakers will be re-recorded by the microphone of the video camera, which cause "howling".

**Other note**
The picture being played back with the connected video equipment cannot be seen on the viewfinder screen of the video camera.

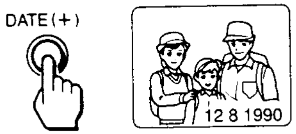
**When you connect the camera to a VTR using the HVA-G1E AC power adaptor**
Set the input selector on the VTR to line input. To start and stop recording, operate the buttons on the VTR.

**When you need not watch the picture being recorded through the viewfinder of the video camera**
Set the EVF ON/OFF switch inside the lithium battery compartment to OFF. This saves wear of the battery of the connected video equipment.

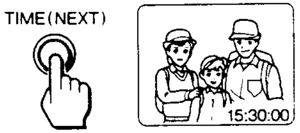
## To Record the Date or Time

**During recording, you can record the current date and time.**

**To record the date**



**To record the time**

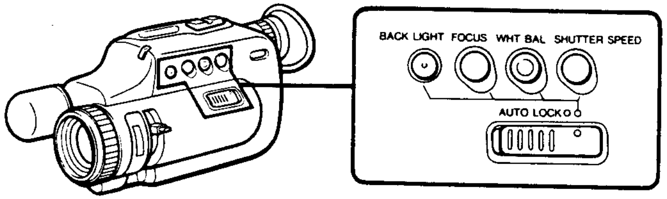


The date or time displayed in the viewfinder is recorded together with the picture.

**To stop recording the date or time**
Press DATE(+) or TIME(NEXT) again. The picture recording continues.

# Selecting the Automatic or Manual Adjustment

When AUTO LOCK is set to AUTO LOCK (green position), the white balance, shutter speed (1/50) and focus are adjusted automatically. But under certain circumstances, manual adjustment is better for effective shooting. For manual adjustment, set AUTO LOCK to the right position and then adjust with each button.



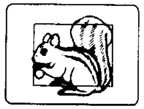
| Item | See page |
|---|---|
| Focus | 17 |
| White balance | 20 |
| Shutter speed | 24 |
| Back light mode | 23 |

**Notes**

- Just after the power is supplied to the camera, the AUTO LOCK function will work regardless of the position of the AUTO LOCK switch.
- If AUTO LOCK is set to AUTO LOCK after you have made a manual adjustment, and then set to the right position again, the previous manual setting will be recalled.

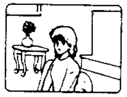
# Manual Focusing

Under most shooting condition, the Auto Focus function of this video camera brings the subject into focus automatically.
But manual focusing is recommended in the conditions listed below.

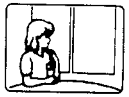


Focus is achieved in this range.

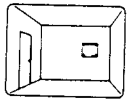
- ■ Insufficient light



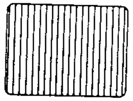
- ■ Too much brightness behind the subject



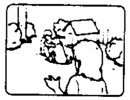
- ■ Subjects with little contrast – wall, sky, etc.



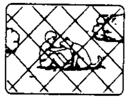
- ■ Finely detailed repetitive patterns



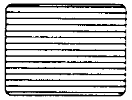
- ■ One subject is close; the other is in the center, but at a distance



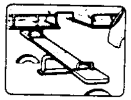
- ■ Subjects beyond nets, etc. or when another subject passes across the camera



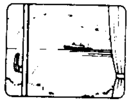
- ■ Horizontal stripes



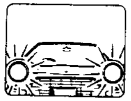
- ■ Diagonal subject



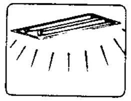
- ■ Subject through frosted glass



- ■ Bright subject or subject reflecting light

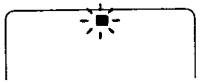


- ■ When shooting under a fluorescent lamp at a shutter speed other than 1/50 or 1/120



### Other uses of manual focusing

- ■ When the white mark on the viewfinder screen blinks

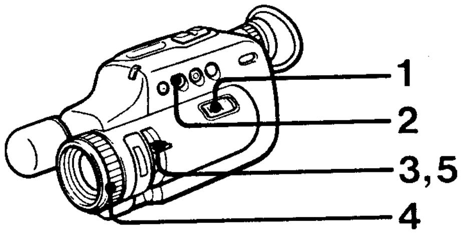


- ■ When using special effects lenses or filters
- ■ For focusing in close-up shooting (page 28)
- ■ When shooting a stationary subject using a tripod
- ■ To save wear of the battery of the connected video equipment
  When AUTO LOCK is set to AUTO LOCK, the autofocusing operates to move the focus ring automatically even in recording pause mode.

---

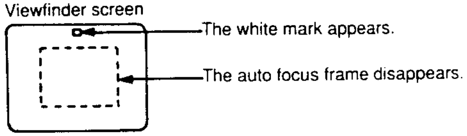
**Autofocusing does not function momentarily when:**
- The shutter speed or the white balance is changed
- The back light function is being adjusted
- Lighting conditions change quickly
- The zooming is changed from wide-angle to telephoto

## Focusing Manually

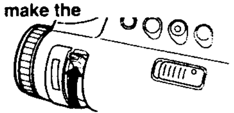


**1** Set AUTO LOCK to the right position.

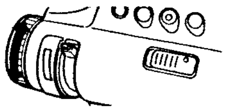
**2** Press FOCUS.



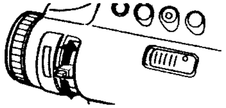
**3** Turn the zoom lever to the telephoto position (66) to make the subject as large as possible in the viewfinder.



**4** Turn the focus ring to achieve sharp focus.



**5** Turn the zoom lever to set the desired shot length.

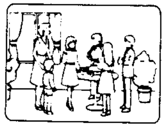
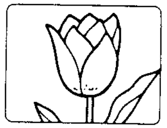
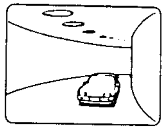
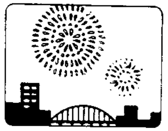


---

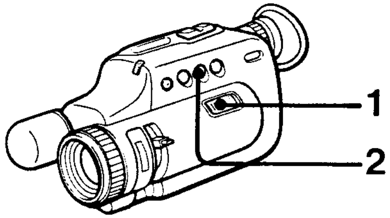
**Some helpful hints**
- When shooting a scene with lots of movement in bright light, set the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the camera.
- When shooting in relatively dark places such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.

# Adjusting the White Balance

In most cases, the auto white balance function of the camera adjusts the white balance automatically. However, if it does not work correctly in the conditions listed below, adjust the white balance manually.

| Shooting conditions | | Indications in the viewfinder |
|---|---|---|
| ■ Lighting conditions change quickly  | | 💡 |
| ■ Too bright such as in photograph studio. | | 💡 |
| ■ Monochromatic subject or background  | | HOLD |
| ■ Under special light conditions  | Sodium lamp | 💡 |
| | Mercury lamp | 💡 |
| | Colour matching fluorescent lamp | ☀ |
| ■ Outdoors: a night view, neon sign or fireworks  | | ☀ |
| ■ Outdoors: scenes after sunset or scenes before sunrise. | | ☀ |

## Adjusting the White Balance Manually



**1** **Set AUTO LOCK to the right position.**

**2** **Select the desired white balance mode by pressing WHT BAL.**
Each time you press the button, the indication changes as follows:
No indication (Auto) → HOLD → ☀
↑ ← 💡 ←

### What is the HOLD mode?

When recording some subjects with different colour temperatures, use the HOLD mode to set a colour temperature and you can achieve a recording with natural colours without being affected by the surroundings.

### To set the white balance to the HOLD mode

1 Set AUTO LOCK to the green position.
2 Point at and record a white, flat object such as a white wall or paper.
3 Set AUTO LOCK to the right position and press WHT BAL so that the HOLD indication appears in the viewfinder.

When the power is turned off or the light source is changed, follow the procedures above again.

# Adjusting the White Balance

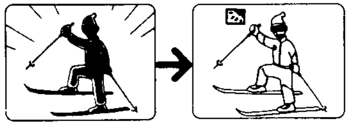
## Colour Temperature and White Balance

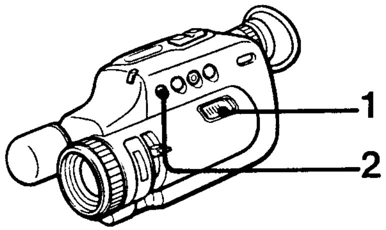
The colour temperature indicates a property of light and is measured in K (Kelvin). It increases as the light source gets bluer and decreases as the light source gets redder. It has no direct relationship with brightness.
This video camera automatically adjusts the white balance within the range shown below.

| Colour temperature (K) | | Light source |
|---|---|---|
| ↑ | 10,000 | Clear sky |
| | 8,000 | |
| Blue | | Slightly overcast |
| | 7,000 | Cloudy, rainy |
| | 6,000 | Fluorescent lamp (daylight) |
| | 5,000 | |
| White | | Direct sunlight |
| | | Fluorescent lamp (white) |
| | 4,000 | 1 hr. after/before sunrise/sunset<br>↑ |
| | 3,500 | Fluorescent lamp (off-white) |
| | | Studio lamp |
| | | Halogen lamp |
| | 3,200 | |
| | 3,000 | |
| | | Tungsten lamp |
| Yellow | | 30 min. after/before sunrise/sunset |
| | 2,500 | |
| Red | | ↓ |
| ↓ | 2,000 | Sunrise/sunset |
| | | Candlelight |

# Shooting with Backlighting

In this camera the iris is automatically controlled.
However, when shooting a subject that is backlit, that is, the light source is coming in from the back of the subject, use BACK LIGHT.





**1** **Set AUTO LOCK to the right position.**

**2** **Press BACK LIGHT.**
The ▣ indication appears in the viewfinder.

### After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. (The ▣ indication goes out.)
Otherwise, the recorded picture will be too bright.

# Setting Shutter Speed

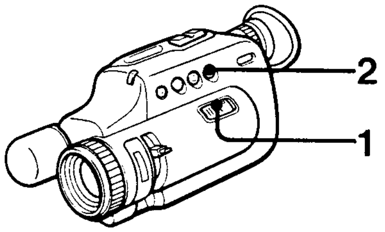
When a fast-moving subject is recorded at a normal shutter speed, the picture may not be seen clearly when played back. This can be improved by increasing the shutter speed.

## Recommended Shutter Speed

Choose an appropriate shutter speed according to the situation, referring the examples listed below.

| **Example use** | **Recommended shutter speed** |
|---|---|
| ■ On clear days, recording golf or tennis swing (To view the hit ball clearly in the still picture mode, set to 1/4000)<br>■ On clear days, recording the skiers | 1/4000 or 1/2000 |
| ■ On overcast days, recording a moving merry-go-round or roller coaster<br>■ Recording outdoors from inside a vehicle (for stable shooting) | 1/1000 or 1/250 |
| ■ Instead of the ND2 filter (To reduce the exposure level to approx. 1/2)<br>■ Recording indoor sports (for stable shooting) | 1/120 |

## Selecting the Shutter Speed



**1** **Set AUTO LOCK to the right position.**

**2** **Press SHUTTER SPEED repeatedly until the desired shutter speed indication appears in the viewfinder.**

Each time you press the button, the indication changes as follows.

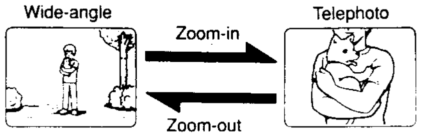
| No indication → | 120 → | 250 → | 1000 → | 2000 → | 4000 |
|---|---|---|---|---|---|
| (1/50) | (1/120) | (1/250) | (1/1000) | (1/2000) | (1/4000) |

**Notes**

- When you select shutter speed 1/250 or faster, record under sunlight or use a video light.
- When you record at certain shutter speeds under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary ("flicker").
- When you record a TV screen at certain shutter speeds, the brightness of the recorded picture may vary.
- When you shoot a very bright subject at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.

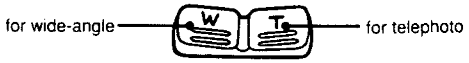
# Zooming

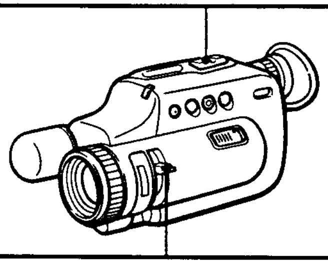
The size of the subject in the scene can be changed. Use "zoom-in" for dramatic close-ups. Use "zoom-out" for panoramic long shots. Also use zooming to focus manually or to decide the shooting angle.


Wide-angle
Zoom-in
Telephoto
Zoom-out

## Power Zooming

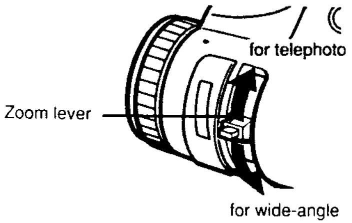
For smooth and constant zooming, press the power zoom button. The scene will gradually become telephoto or wide-angle.


for wide-angle
W
T
for telephoto



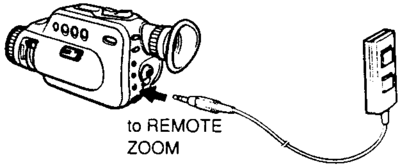
## Zooming Manually

For a dramatic effect, turn the zoom lever.


for telephoto
Zoom lever
for wide-angle

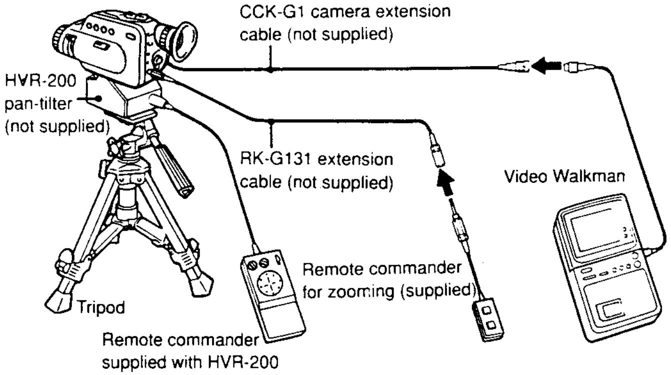
### Power zooming with the supplied Remote Commander

Use of the supplied Remote Commander allows power zooming when you are apart from the camera. Press the TELE button for telephoto and the WIDE button for wide-angle.


to REMOTE ZOOM

### To remotely control the CCD-G100E

Use Sony HVR-200 Pan-tilter. You can remotely pan or tilt the video camera from up to approximately 5 m (16 ft).


CCK-G1 camera extension cable (not supplied)
HVR-200 pan-tilter (not supplied)
RK-G131 extension cable (not supplied)
Video Walkman
Remote commander for zooming (supplied)
Tripod
Remote commander supplied with HVR-200

---

**For more zooming effect**
Use the VCL-1537 or VCL-0537 conversion lens (not supplied).
Auto focus, however, does not function in that case. Focus manually.

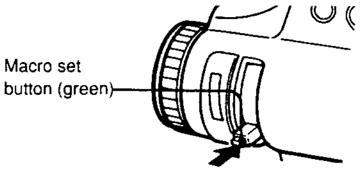
**Focal length of this video camera**
The focal length of this video camera is 11 mm to 66 mm.
Converted into the focal length of a 35-mm camera, this means approximately 58.5 mm to 351 mm.

---

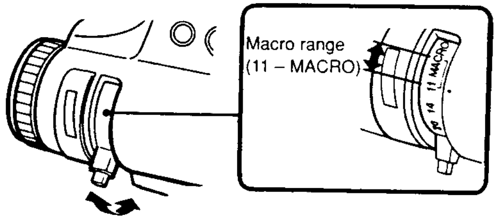
# Close-ups (Macro)

Even tiny subjects can literally fill the screen for dramatic close-up effects.
It can be used to store a title.

**1** **Turn the zoom lever to the MACRO position, pressing the macro set button.**
The subject can be as close as approximately 10 mm (13/32 in.) from the lens surface.



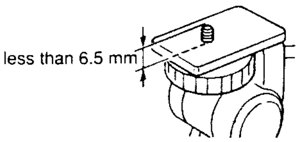
**2** **Turn the zoom lever within the MACRO range to focus sharply.**



Autofocusing does not function in macro shooting.

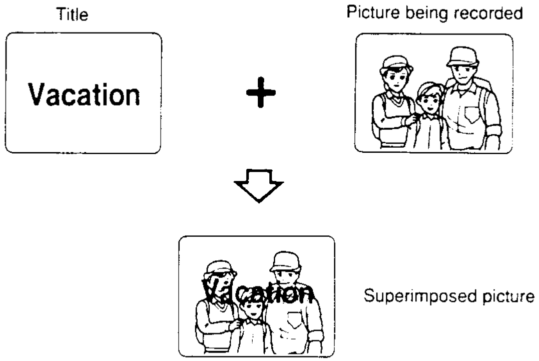
### Use of a tripod

When shooting in macro, the depth of field is very shallow, so pay attention to focus.
To keep the subject in focus, use a tripod or monopod. When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5 mm ($2^5/8$ in.) Otherwise, the screw may damage the inner parts of the camera.



# Recording a Title

You can superimpose your own hand-lettered message or illustration over the picture during recording.



- One title can be stored.
- The colour of the title can be selected from 8 colours.

**Before recording, store a message or an illustration in the camera.**

### To select the colour

Press COLOUR/MODE until the desired indication appears while the title is displayed in the viewfinder.
Each time you press the button, the colour indication changes in the viewfinder, as follows.

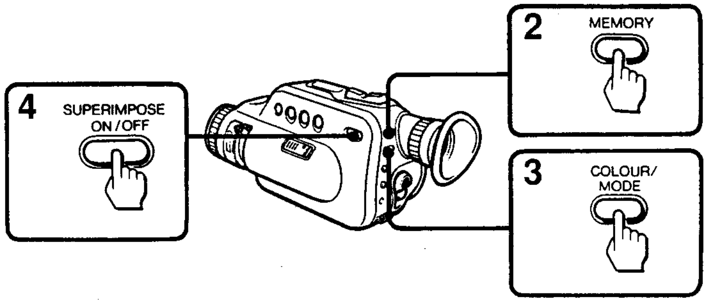
→ WHT (white) → BLUE → GRN (Green) → CYAN → RED
— BLK (black) ← YEL (yellow) ← VIO (violet) ←

# Recording a Title

## Storing a Title

### Before Storing

- Make a desired title card.
  Use a plain, white card and draw a title with a dark colour in thick letters.
- Install the lithium battery. See page 8.
- Connect video equipment and set it to recording pause mode.



1 **Point the camera to the title card and adjust the focus.**
To focus the title, use the close-up function. (See page 28.)

2 **Press MEMORY to store the title.**
The title is displayed in the viewfinder.

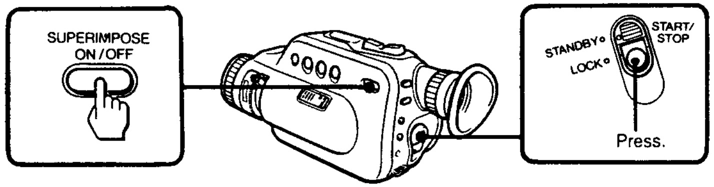
3 **Press COLOUR/MODE to select the title colour.**

4 **Press SUPERIMPOSE to turn off the title.**
The title is stored in memory until you change it.

**To check the stored title**
Press SUPERIMPOSE. To turn off the title, press the button again.

**To change the title**
Repeat the above procedure from step 1 with a new title.

## Recording the Title



| To record the title at the beginning | To record a title during camera recording |
|---|---|
| 1 **Connect video equipment and set it to recording pause mode.** | 1 **Press SUPERIMPOSE at the point from which you want to insert the title.**<br>The title is displayed. |
| 2 **Press SUPERIMPOSE.**<br>The title is displayed in the viewfinder. | |
| 3 **Start recording.** | 2 **Wait for a while and press SUPERIMPOSE.**<br>The title goes off. |
| 4 **Wait for a while and press SUPERIMPOSE again.**<br>The title goes off. | |
| **To insert the title without the picture in the background**<br>Point the camera to a white, flat subject such as a white wall, paper, etc. | **To record the same title several times**<br>Repeat the above procedure. |

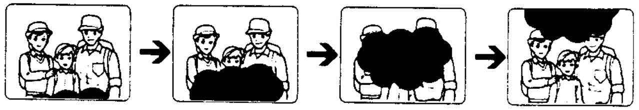
**Notes on title colour**
- You can change the title colour even after displaying the title in the above procedure.
- The colour indication in the viewfinder is not recorded.

## Various Title Display Modes

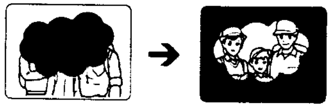
You can record the title in various display modes, as in the chart below.
To select the mode, press COLOUR/MODE until the desired mode indication appears while the title is not displayed in the viewfinder.
Each time you press the button, the indication of the mode changes in the viewfinder, as follows.

↑ (Title scroll mode) → T (Title reverse mode) → T ↑ (Title reverse and scroll mode) → No indication (No title mode) → ↑

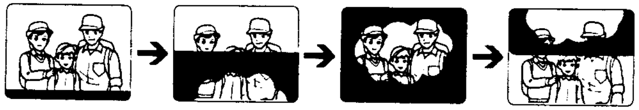
**■ Title scroll mode (↑)**
The title scrolls up from the bottom.



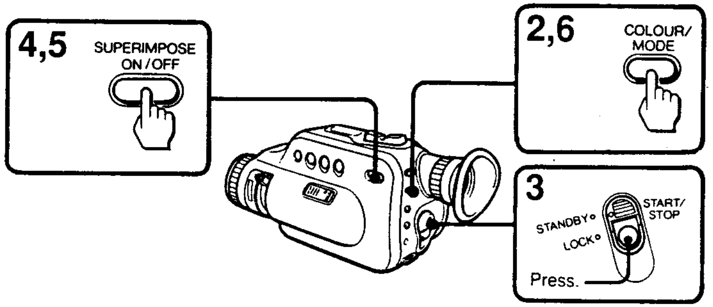
**■ Title reverse mode (T)**
The colour scheme of the title and the background picture can be reversed.



**■ Title reverse and scroll mode (T ↑)**
Reversed title scrolls up from the bottom.



## Recording the Title in the Selected Display Mode



1 **Set the connected video equipment to recording pause mode.**

2 **Press COLOUR/MODE repeatedly until the desired mode indication (↑, T or T ↑) appears.**

3 **Start recording.**

4 **Press SUPERIMPOSE at the point from which you want to insert the title.**
The title is displayed.

5 **Wait for a while and press SUPERIMPOSE.**
The title goes off.

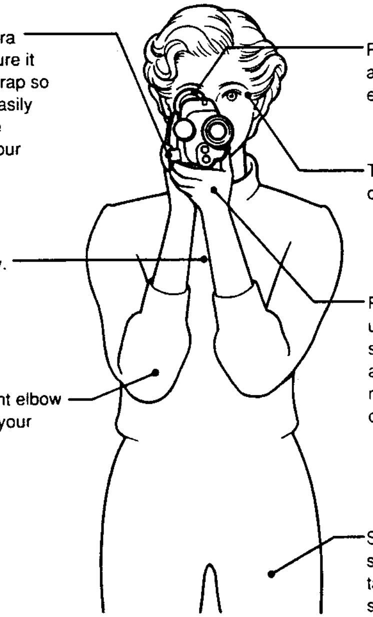
6 **Press COLOUR/MODE repeatedly until the indication disappears.**

# Hints for Better Shooting

## Getting Stable Pictures

### Take a good posture for shooting

For hand-held shots, it is important to hold the camera properly.



Hold the camera firmly and secure it with the grip strap so that you can easily manipulate the camera with your thumb.

Breathe gently.

Place your right elbow firmly against your side.

Place your eye firmly against the viewfinder eyecup.

Try to keep both eyes open.

Place your left hand under the camera to support it. When adjusting the focus manually, make sure the camera does not move.

Stand opposite to the subject and let your feet take a comfortable stance.

### Use a tripod or monopod if possible

If you have a tripod for a still camera, it can also be used with the video camera.
If a tripod is not available, try placing the camera on a tabletop, wall, or any other flat surface of suitable height.

### Keep the horizontal plane level

The horizontal plane can be easily determined by using the viewfinder frame as a reference.

## Lighting

### Shoot with the sun behind you

When the light source is behind the subject, or in the following situations, the subject will be recorded too dark and the background too light.

- The subject is indoors and there is a window behind the subject.
- Bright sources such as fluorescent or incandescent lamps are included in the scene.
- You are shooting a person wearing white or shiny clothes in front of a white background. In this case, the face will be recorded too dark.

### Use video lights in the dark

To get the best colours, a sufficient light level must be maintained.
Photography lamps or halogen lamps are recommended. For best results; use of Sony video lights is recommended since their weight and low heat output levels allow safe, direct connection to the camera.
When using the video light, attach it to the camera with the Sony VCT-55L shoe adaptor.
Do not point the light at the camera. The high heat from the light can warp the casing of the camera.
For detailed instructions on proper use of the light, read its instruction manual.

### Brightness levels

Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording technique.

| | | |
|---|---|---|
| Snow-covered mountains<br>Snow fields<br>Sandy beach, clear day in summer | Unit: lux | ND filter recommended |
| Clear day, mid-day (100,000 lux.)<br>Clear day, mid-afternoon (35,000)<br>Overcast day, mid-day (32,000) | 100,000 | Normal recording |
| | 10,000 | |
| Overcast day, one hour after sunrise (2,000)<br>Office lit by fluorescent lamps, near window (1,000)<br>Clear day, one hour before sunset (1,000) | 1,000 | |
| Department store counter (500 – 700)<br>Station wicket (650)<br>Office lit by fluorescent lamps (400 – 500) | 500 | |
| Room lit by two 30 W fluorescent lamps (300)<br>Subway station platform (300) | 300 | Video light recommended |
| Arcade at night (150 – 200) | 100 | |
| Theater lobby (15 – 35)<br>Candlelight (10 – 15)<br>( ): lux | 10 | |

# Precautions

- Should any solid object or liquid fall into the cabinet, unplug the video camera and have it checked by qualified personnel before operating it any further.
- Do not wrap up the unit and operate it because heat may build up internally.
- Avoid rough handling or mechanical shock to the unit.
- Do not apply excessive force to the microphone.
- Do not hold the unit by the viewfinder.
- Do not point the camera directly at the sun.
- Avoid using and storing the unit in the following locations:
  - — Inside a car with doors and windows closed
  - — Locations susceptible to vibration
  - — Locations exposed to strong magnetic fields
  - — Locations exposed to high humidity
  - — Locations near AM radio or tuner (Sound may be affected.)
- If the unit is used at the beach, take special care to keep the unit from being exposed to salt water. Otherwise, the unit may be damaged beyond repair.
- Avoid shooting the same object for a long period of time as this will damage the colour filter inside the camera and may cause a poor picture quality.
- When the unit is not in use, cover the lens with the lens cap.

## Moisture condensation on the lens

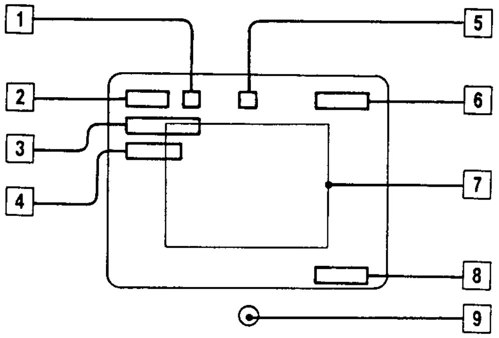
If the unit is brought directly from a cold to a warm location, moisture may condense on the lens and it becomes dim. If this occurs, turn off the connected video equipment and leave the video camera unused at least for one hour.

## Use of an external microphone

When a stereo microphone with a stereo miniplug is connected to the MIC jack of this video camera and the camera is connected to stereo video equipment, you can make a stereo recording. However, if the connected microphone is monaural and the connected video equipment is stereo, only the sound on the left channel will be recorded. To avoid this, use Sony PC-251MS plug adaptor (stereo miniplug to minijack).

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.

# Indications inside the Viewfinder



1 ▧ (Back light)
Appears while the back light function is being adjusted.

2 Manual white balance mode
HOLD, ☀ (outdoors), 💡 (indoors)

3 Title, mode and colour

4 Shutter speed

5 ■ (Focusing)
Lights while manual focusing.
Blinks when auto focus function does not operate correctly.

6 REC (recording)
Appears during recording.

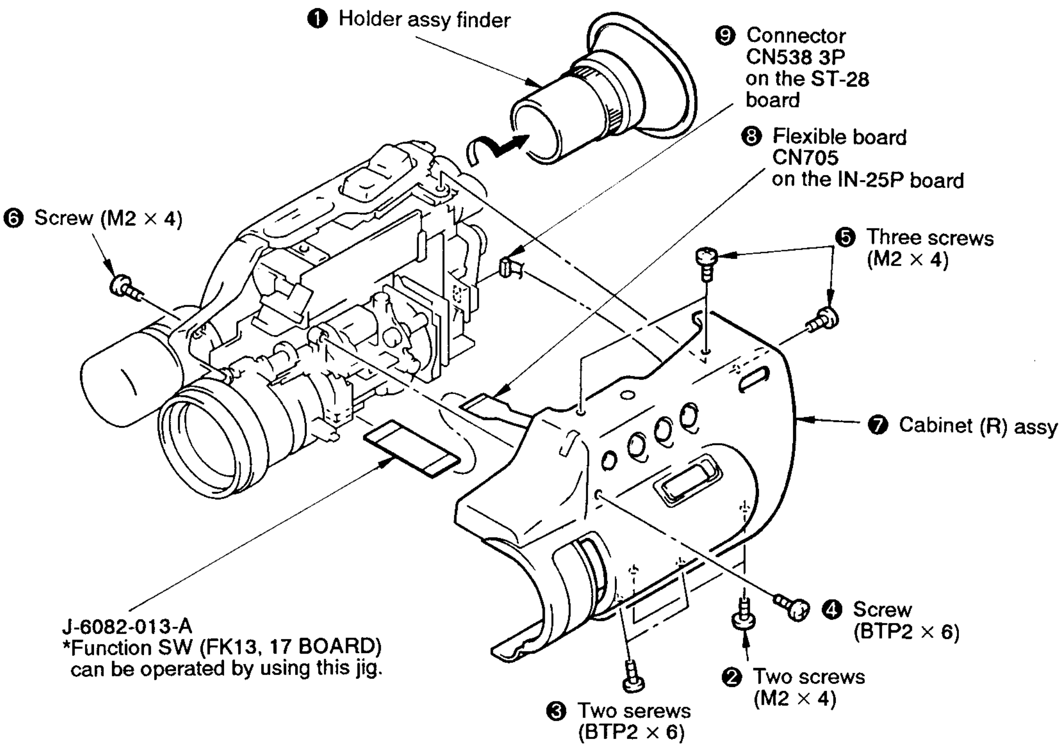
7 Auto focus frame
Appears during auto focus recording.
Focus is achieved within this frame.

8 Date or time

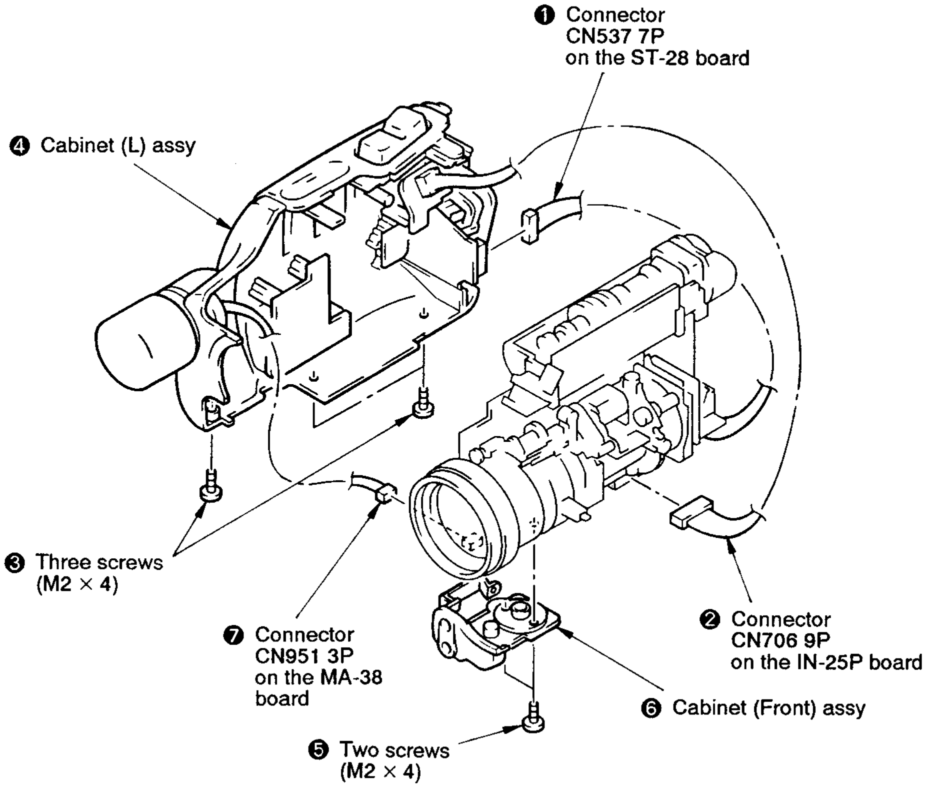
9 Tally lamp
Lights during recording.
Blinks when the battery of the connected video equipment has been exhausted or the tape has reached its end.

# SECTION 2
# DISASSEMBLY

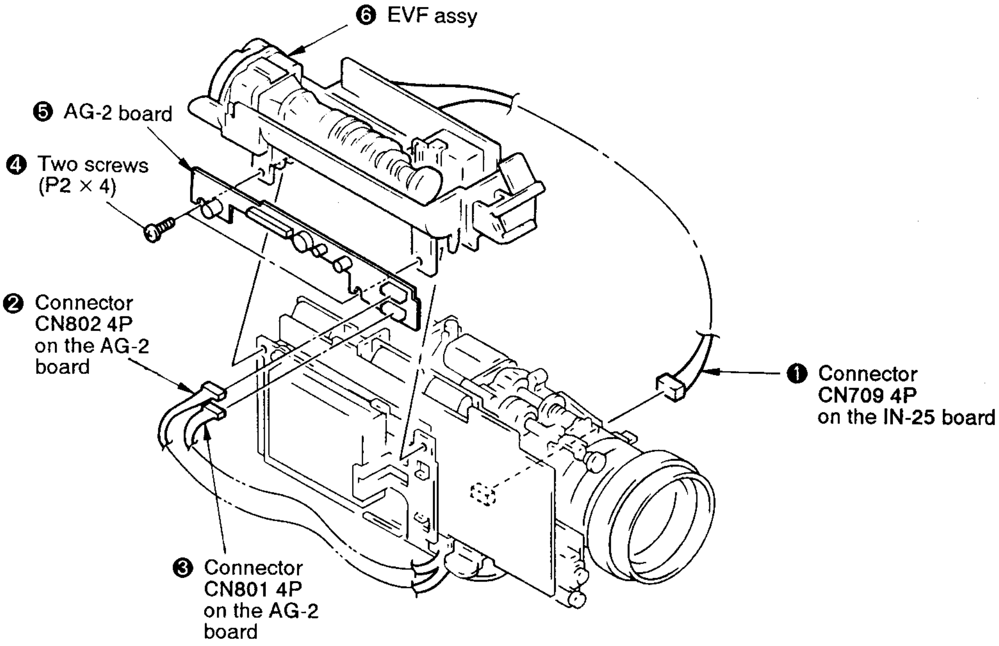
## 2-1. REMOVAL OF CABINET (R) ASSEMBLY


❶ Holder assy finder
❾ Connector CN538 3P on the ST-28 board
❽ Flexible board CN705 on the IN-25P board
❻ Screw (M2 × 4)
❺ Three screws (M2 × 4)
❼ Cabinet (R) assy
J-6082-013-A
*Function SW (FK13, 17 BOARD) can be operated by using this jig.
❹ Screw (BTP2 × 6)
❷ Two screws (M2 × 4)
❸ Two serews (BTP2 × 6)

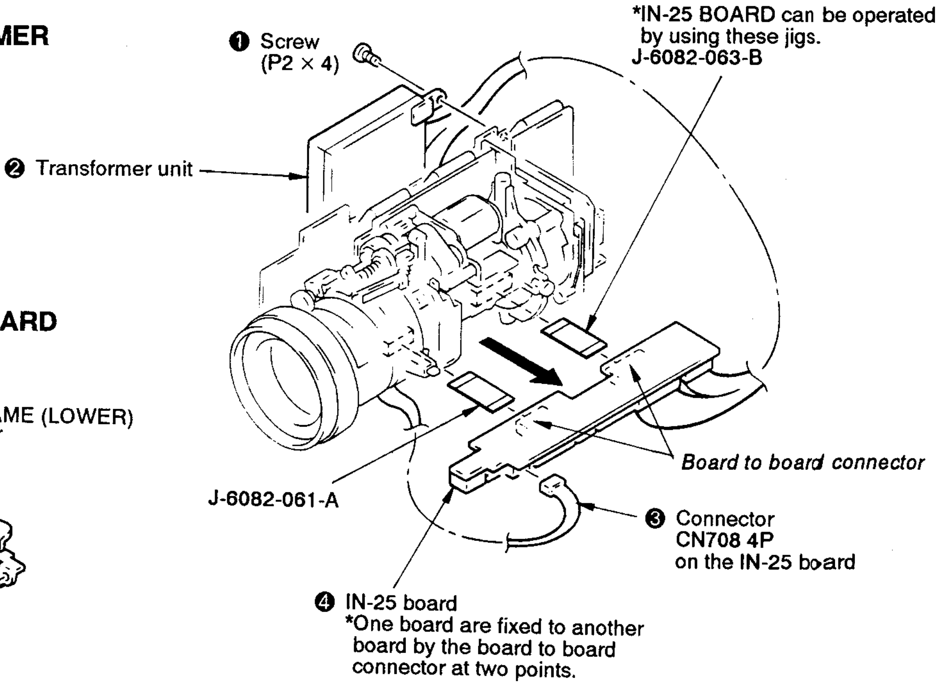
## 2-2. REMOVAL OF CABINET (L) ASSEMBLY


❶ Connector CN537 7P on the ST-28 board
❹ Cabinet (L) assy
❸ Three screws (M2 × 4)
❼ Connector CN951 3P on the MA-38 board
❷ Connector CN706 9P on the IN-25P board
❻ Cabinet (Front) assy
❺ Two screws (M2 × 4)

## 2-3. REMOVAL OF EVF ASSEMBLY


⑥ EVF assy
⑤ AG-2 board
④ Two screws (P2 × 4)
② Connector CN802 4P on the AG-2 board
① Connector CN709 4P on the IN-25 board
③ Connector CN801 4P on the AG-2 board

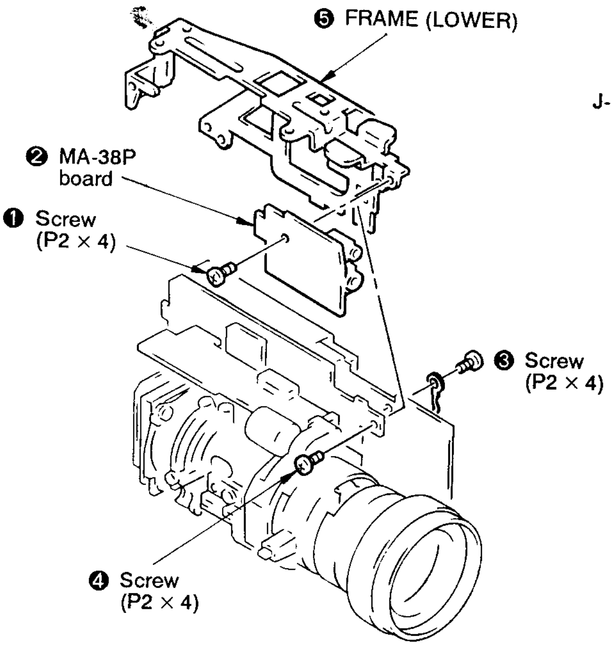
## 2-4. REMOVAL OF TRANSFORMER UNIT AND IN-25 BOARD


① Screw (P2 × 4)
② Transformer unit
J-6082-063-B
Board to board connector
J-6082-061-A
③ Connector CN708 4P on the IN-25 board
④ IN-25 board

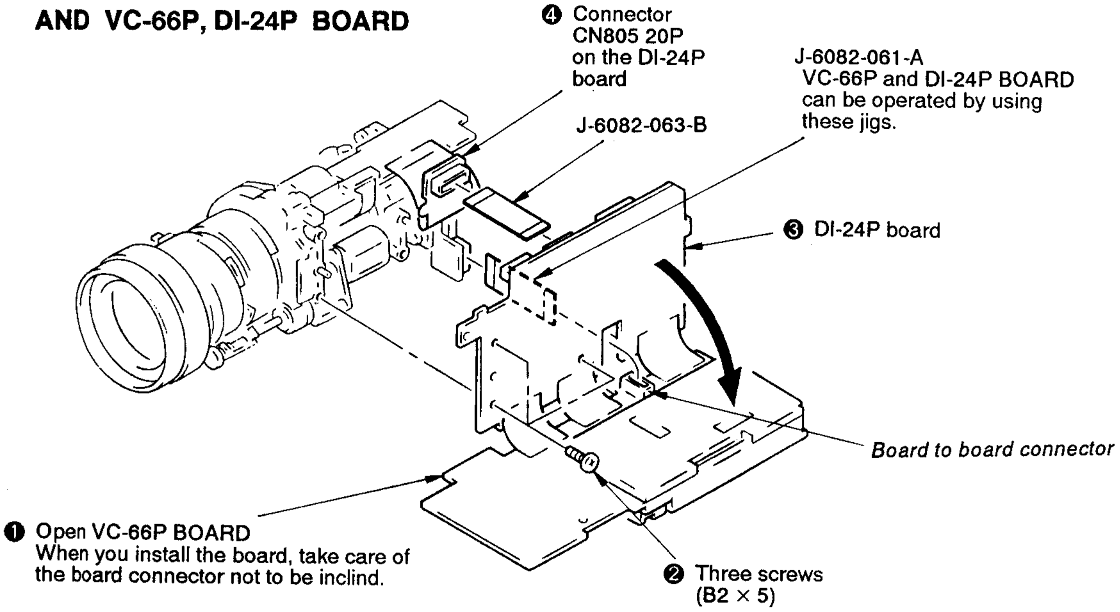
*IN-25 BOARD can be operated by using these jigs.

*One board are fixed to another board by the board to board connector at two points.

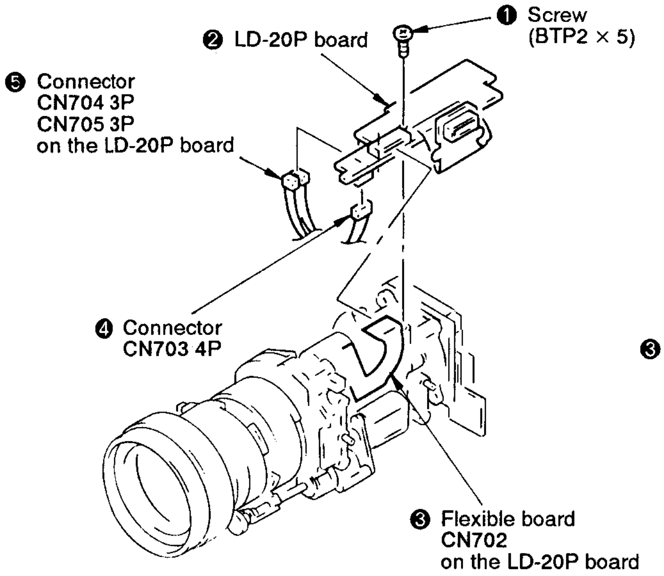
## 2-5. REMOVAL OF MA-38P BOARD AND FRAME (LOWER)


⑤ FRAME (LOWER)
② MA-38P board
① Screw (P2 × 4)
③ Screw (P2 × 4)
④ Screw (P2 × 4)

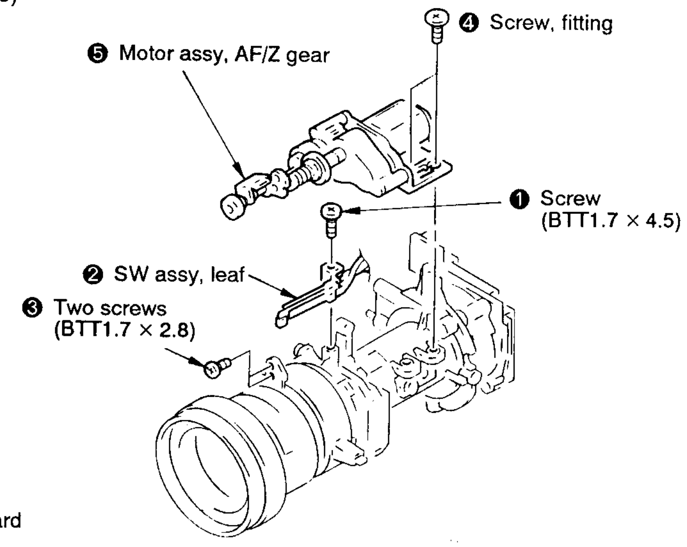
## 2-6. REMOVAL OF LENS ASSEMBLY AND VC-66P, DI-24P BOARD


❹ Connector
CN805 20P
on the DI-24P
board
J-6082-061-A
VC-66P and DI-24P BOARD
can be operated by using
these jigs.
J-6082-063-B
❸ DI-24P board
Board to board connector
❶ Open VC-66P BOARD
When you install the board, take care of
the board connector not to be inclind.
❷ Three screws
(B2 × 5)

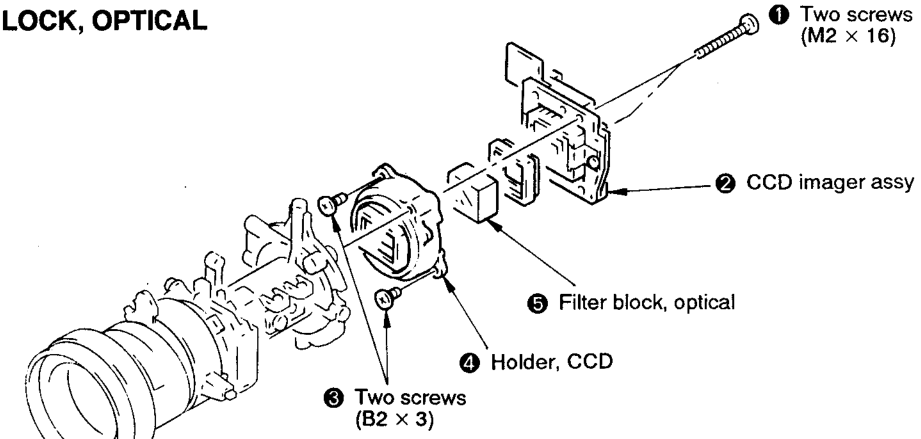
## 2-7. REMOVAL OF LD-20P BOARD


❶ Screw
(BTP2 × 5)
❷ LD-20P board
❺ Connector
CN704 3P
CN705 3P
on the LD-20P board
❹ Connector
CN703 4P
❸ Flexible board
CN702
on the LD-20P board

## 2-8. REMOVAL OF MOTOR ASSEMBLY, AF/Z GEAR


❹ Screw, fitting
❺ Motor assy, AF/Z gear
❶ Screw
(BTT1.7 × 4.5)
❷ SW assy, leaf
❸ Two screws
(BTT1.7 × 2.8)

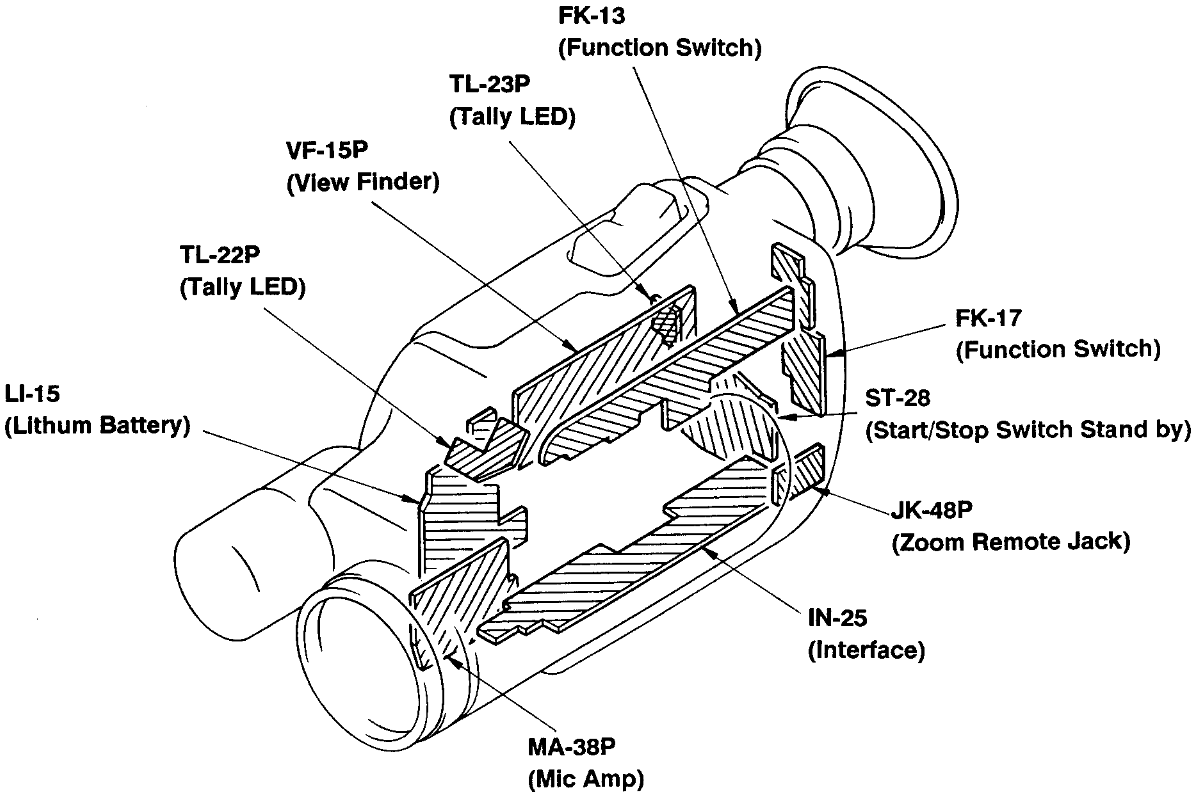
## 2-9. REMOVAL OF CCD ASSEMBLY AND FILTER BLOCK, OPTICAL


❶ Two screws
(M2 × 16)
❷ CCD imager assy
❺ Filter block, optical
❹ Holder, CCD
❸ Two screws
(B2 × 3)

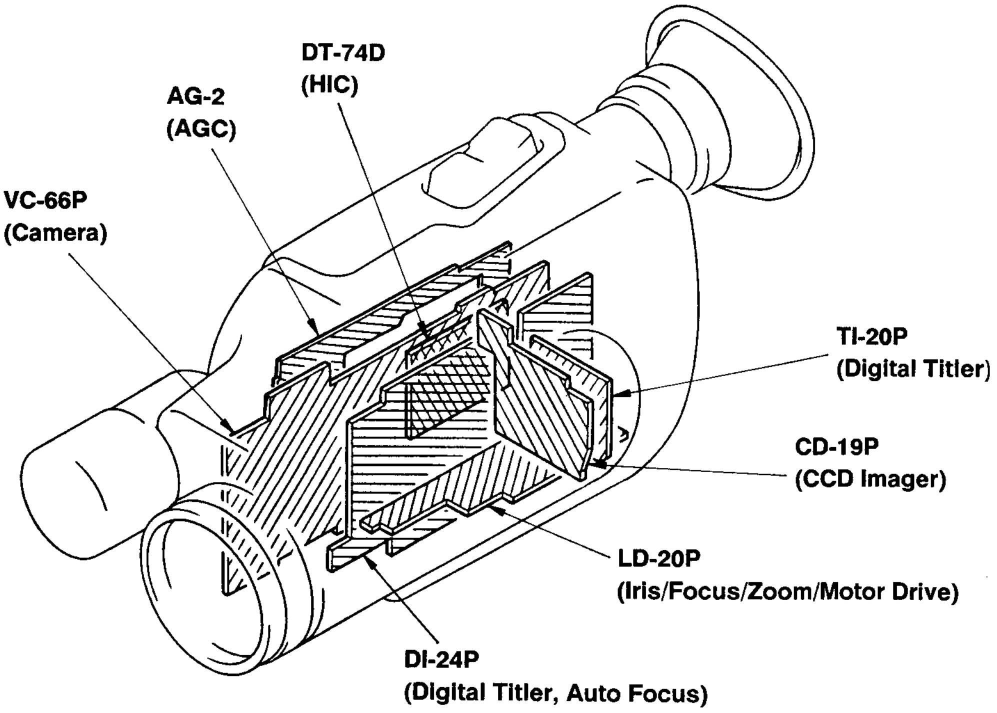
# SECTION 3
# DIAGRAMS

## 3-1. CIRCUIT BOARD LOCATION

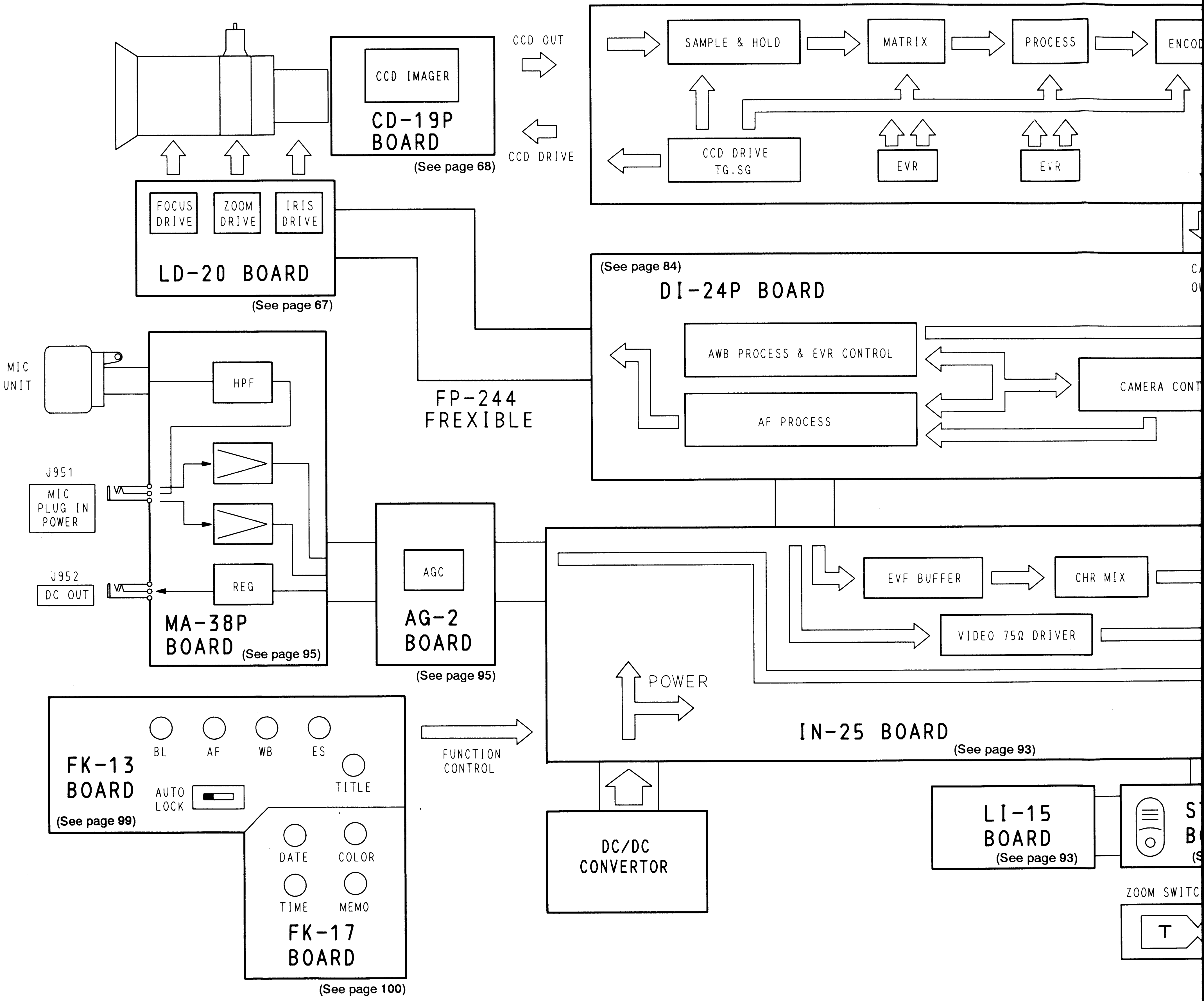
### CIRCUIT BOARD LOCATION (1)

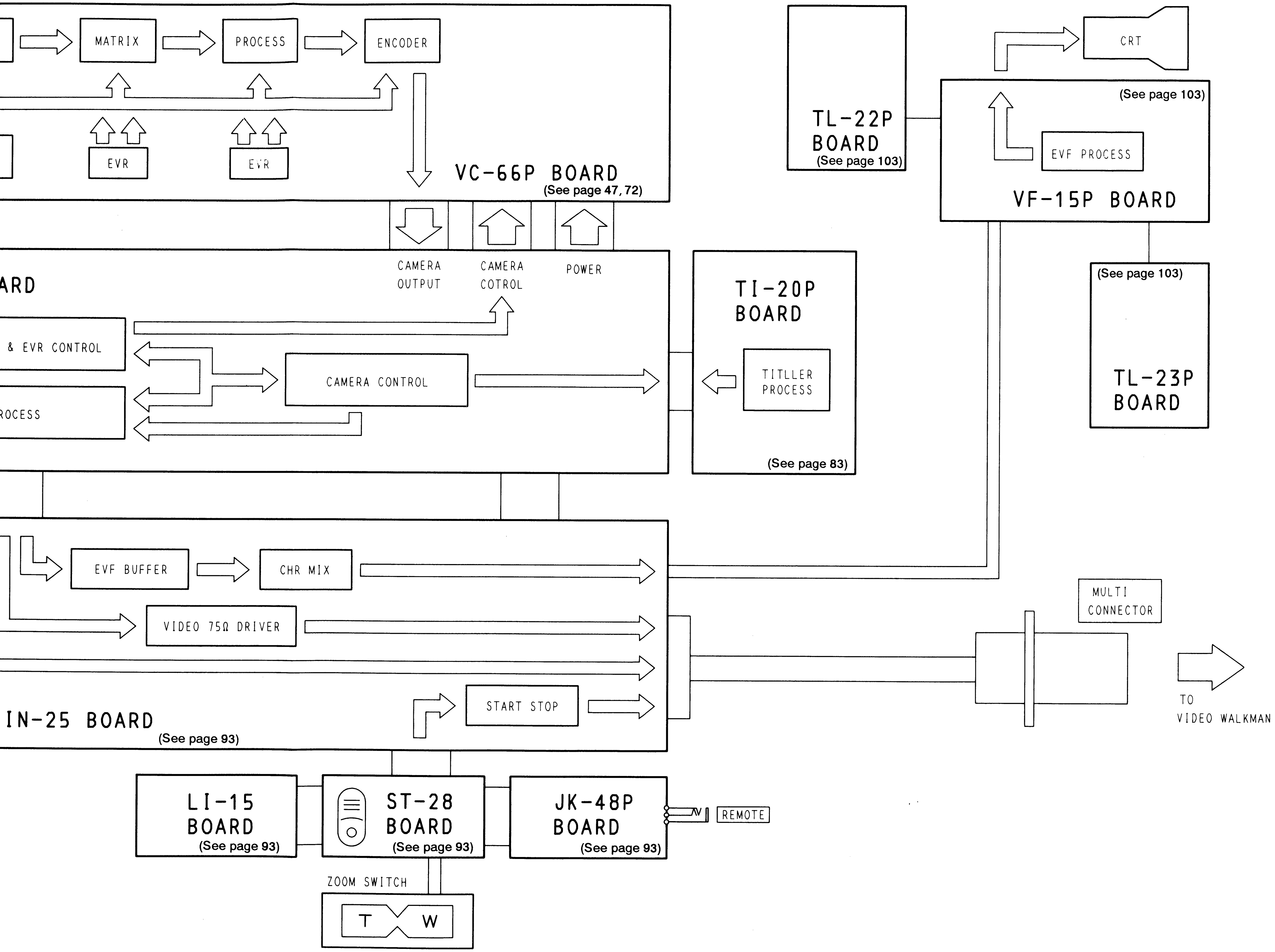

FK-13
(Function Switch)
TL-23P
(Tally LED)
VF-15P
(View Finder)
TL-22P
(Tally LED)
LI-15
(Lithum Battery)
FK-17
(Function Switch)
ST-28
(Start/Stop Switch Stand by)
JK-48P
(Zoom Remote Jack)
IN-25
(Interface)
MA-38P
(Mic Amp)

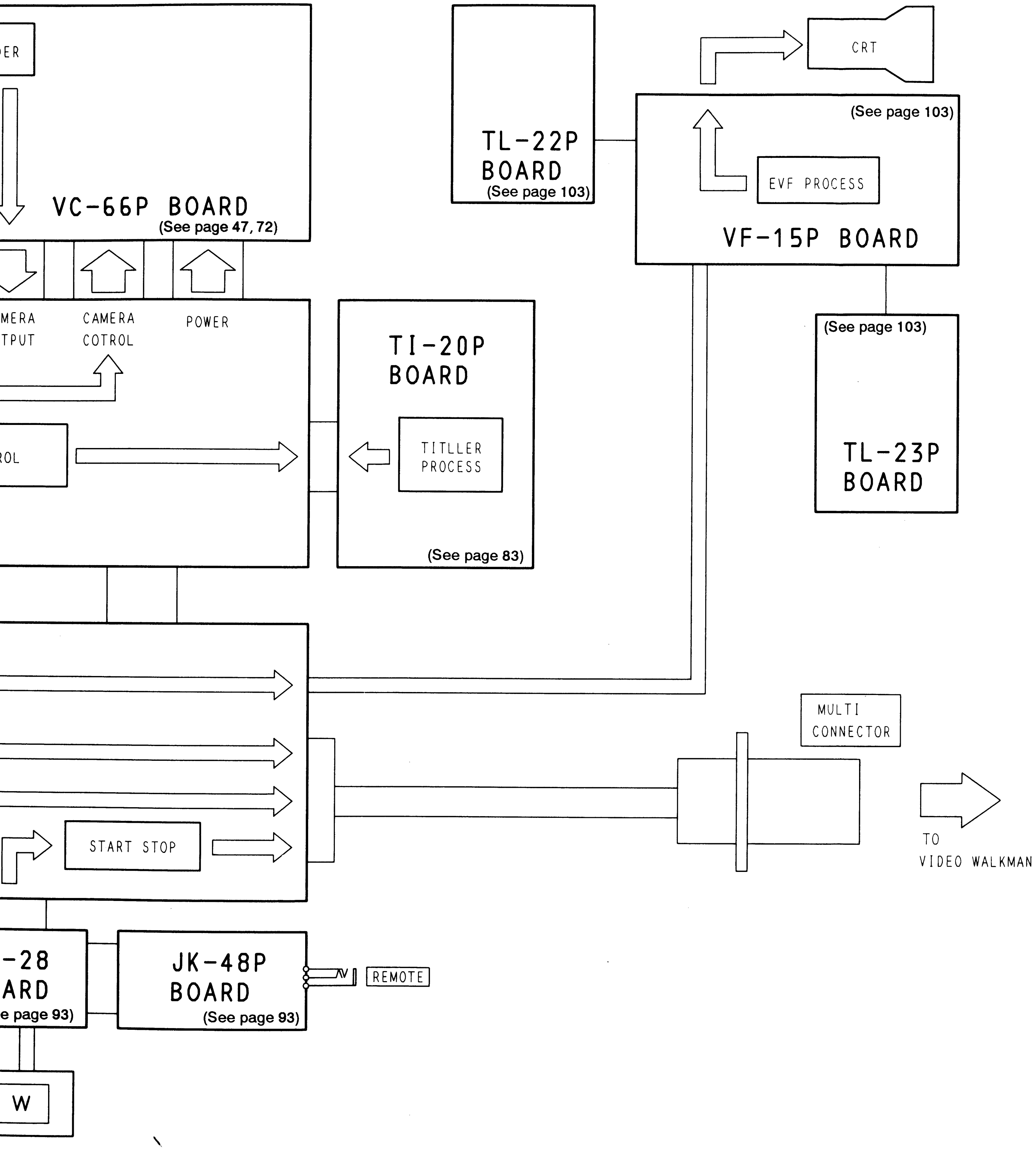
### CIRCUIT BOARD LOCATION (2)


DT-74D
(HIC)
AG-2
(AGC)
VC-66P
(Camera)
TI-20P
(Digital Titler)
CD-19P
(CCD Imager)
LD-20P
(Iris/Focus/Zoom/Motor Drive)
DI-24P
(Digital Titler, Auto Focus)

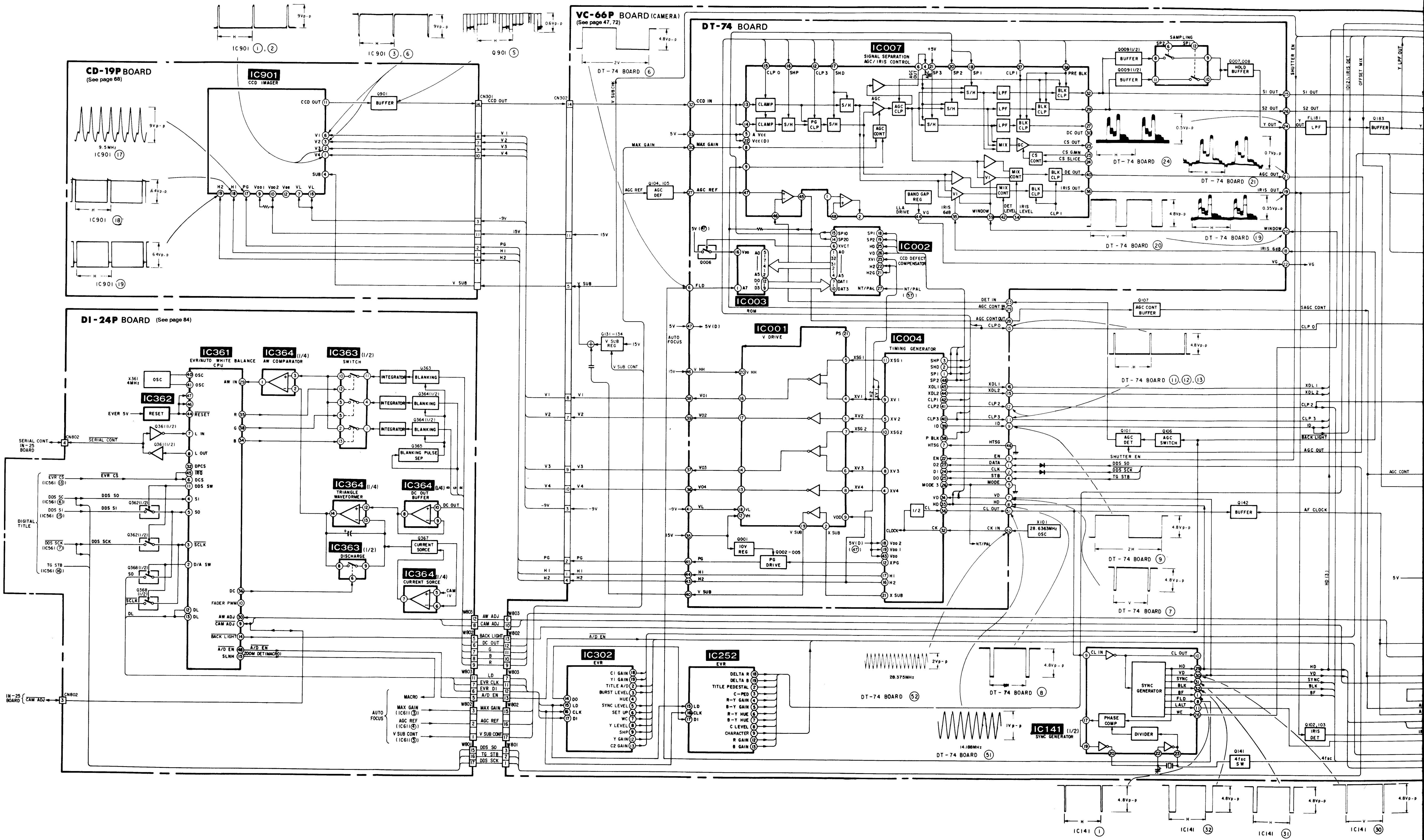
### 3-2. OVERALL BLOCK DIAGRAM

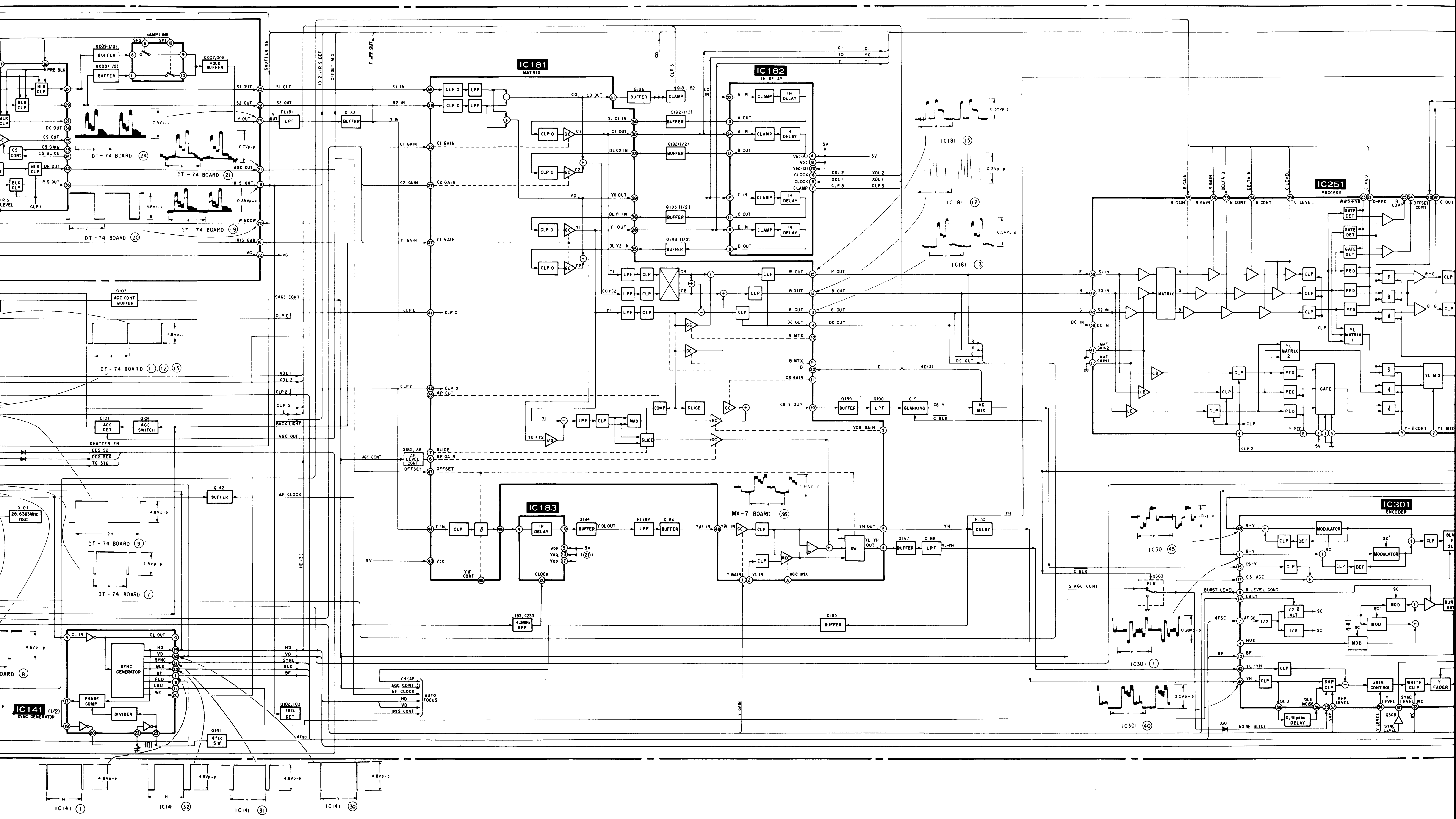

CCD IMAGER
CD-19P BOARD
(See page 68)
CCD OUT
CCD DRIVE
SAMPLE & HOLD
MATRIX
PROCESS
ENCOD
CCD DRIVE TG.SG
EVR
EVR
FOCUS DRIVE
ZOOM DRIVE
IRIS DRIVE
LD-20 BOARD
(See page 67)
(See page 84)
DI-24P BOARD
AWB PROCESS & EVR CONTROL
AF PROCESS
CAMERA CONT
FP-244 FREXIBLE
MIC UNIT
HPF
J951
MIC PLUG IN POWER
J952
DC OUT
REG
MA-38P BOARD
(See page 95)
AGC
AG-2 BOARD
(See page 95)
EVF BUFFER
CHR MIX
VIDEO 75Ω DRIVER
POWER
IN-25 BOARD
(See page 93)
BL
AF
WB
ES
TITLE
FK-13 BOARD
(See page 99)
AUTO LOCK
DATE
COLOR
TIME
MEMO
FK-17 BOARD
(See page 100)
FUNCTION CONTROL
DC/DC CONVERTOR
LI-15 BOARD
(See page 93)
ZOOM SWITC
T

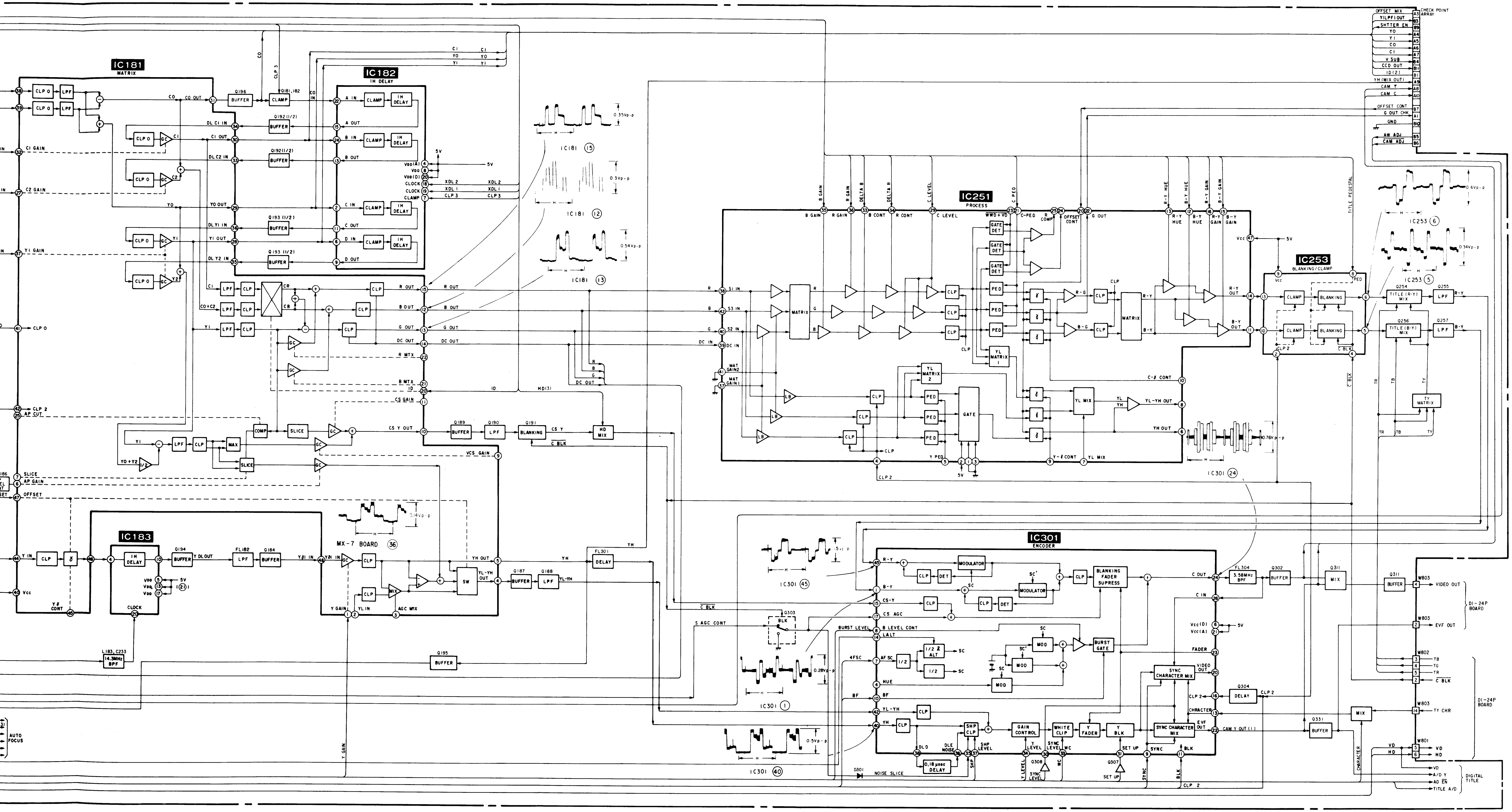

MATRIX
PROCESS
ENCODER
EVR
EVR
VC-66P BOARD
(See page 47, 72)
TL-22P
BOARD
(See page 103)
CRT
(See page 103)
EVF PROCESS
VF-15P BOARD
(See page 103)
TL-23P
BOARD
CAMERA
OUTPUT
CAMERA
COTROL
POWER
ARD
& EVR CONTROL
ROCESS
CAMERA CONTROL
TI-20P
BOARD
TITLLER
PROCESS
(See page 83)
EVF BUFFER
CHR MIX
VIDEO 75Ω DRIVER
START STOP
IN-25 BOARD
(See page 93)
MULTI
CONNECTOR
TO
VIDEO WALKMAN
LI-15
BOARD
(See page 93)
ST-28
BOARD
(See page 93)
JK-48P
BOARD
(See page 93)
REMOTE
ZOOM SWITCH
T
W


ER
VC-66P BOARD
(See page 47, 72)
MERA
TPUT
CAMERA
COTROL
POWER
ROL
TI-20P
BOARD
TITLLER
PROCESS
(See page 83)
TL-22P
BOARD
(See page 103)
CRT
(See page 103)
EVF PROCESS
VF-15P BOARD
(See page 103)
TL-23P
BOARD
MULTI
CONNECTOR
TO
VIDEO WALKMAN
START STOP
-28
ARD
e page 93)
JK-48P
BOARD
(See page 93)
REMOTE
W

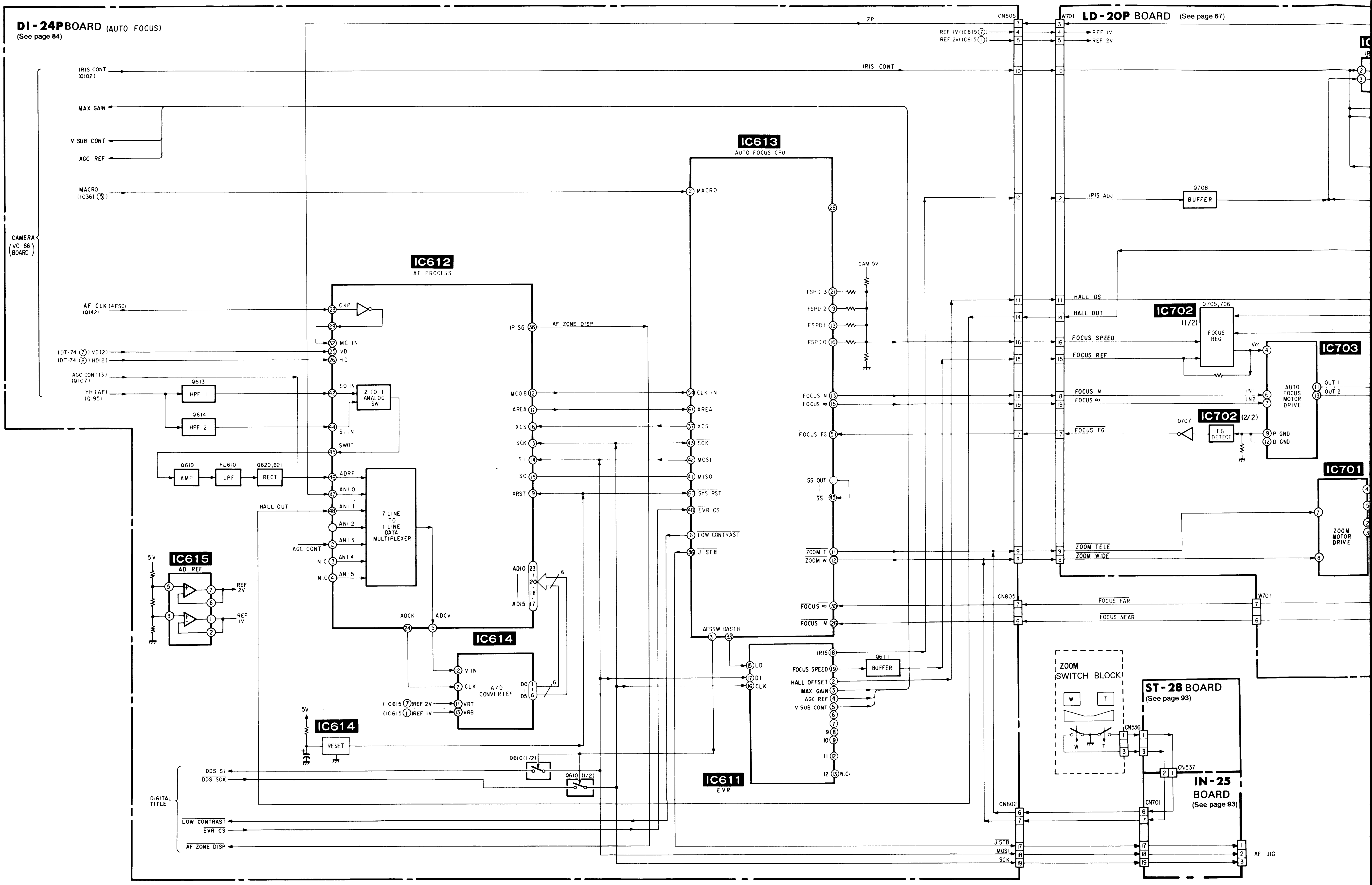
## 3-3. CAMERA BLOCK DIAGRAM

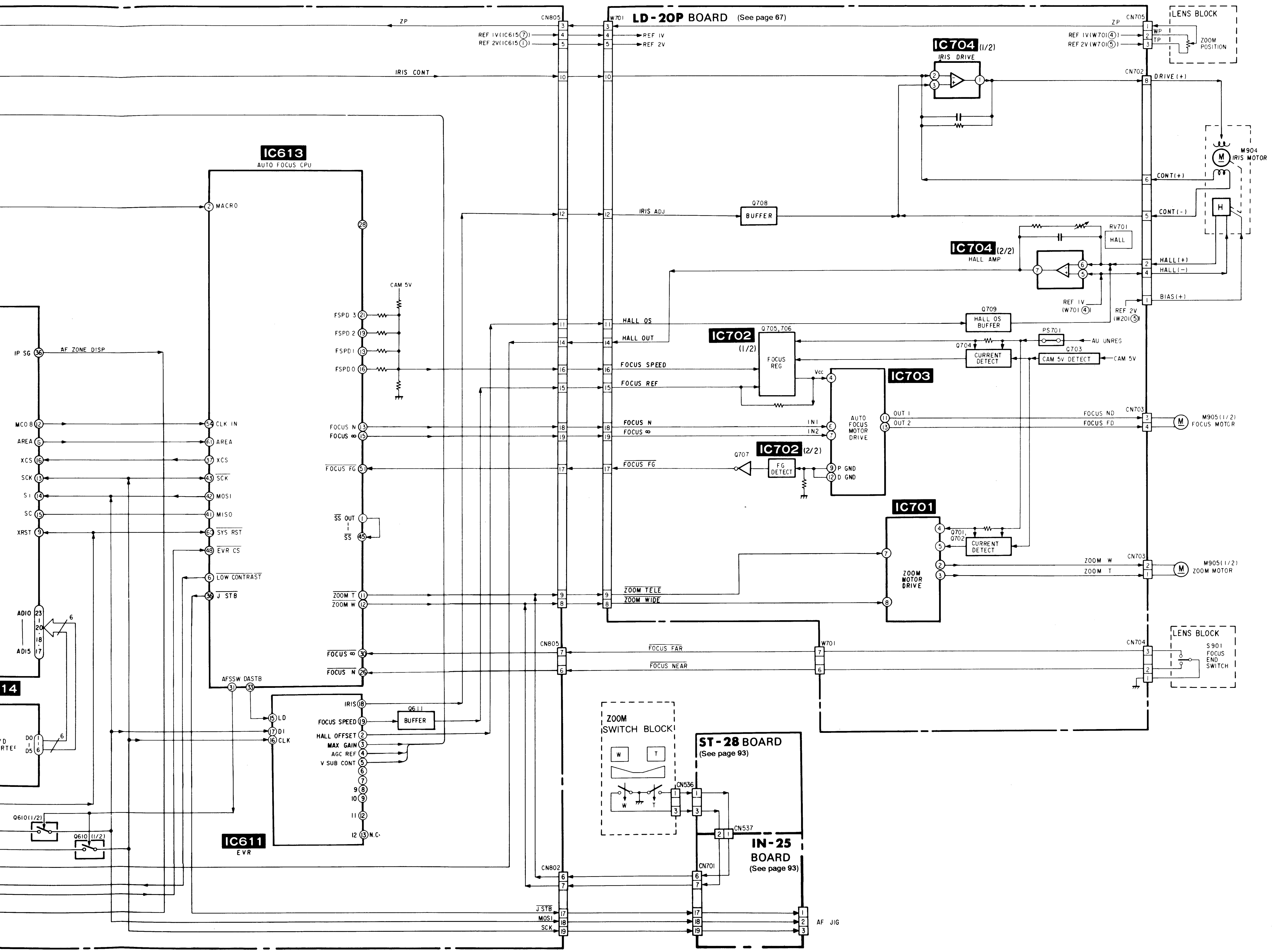

VC-66P BOARD (CAMERA)
(See page 47, 72)
DT-74 BOARD
CD-19P BOARD
(See page 68)
IC901
CCD IMAGER
CCD OUT
BUFFER
Q901
IC901 ①, ②
IC901 ③, ⑥
Q901 ⑤
9.5MHz
IC901 ⑰
IC901 ⑱
IC901 ⑲
DT-74 BOARD ⑥
DI-24P BOARD (See page 84)
IC361
EVR/AUTO WHITE BALANCE CPU
IC364 (1/4)
AW COMPARATOR
IC363 (1/2)
SWITCH
IC362
RESET
OSC
X361 4MHz
INTEGRATOR
BLANKING
BLANKING PULSE SEP
Q363
Q364 (1/2)
Q365
IC364 (1/4)
TRIANGLE WAVEFORMER
IC364 (1/4)
DC OUT BUFFER
IC363 (1/2)
DISCHARGE
Q367
CURRENT SORCE
IC364 (1/4)
CURRENT SORCE
SERIAL CONT IN-25 BOARD
DIGITAL TITLE
IN-25 BOARD
CAM ADJ
EVER 5V
AW ADJ
BACK LIGHT
A/D EN
ZOOM DET (MACRO)
FADER PWM
MACRO
AUTO FOCUS
MAX GAIN (IC611 ③)
AGC REF (IC611 ④)
V SUB CONT (IC611 ③)
IC007
SIGNAL SEPARATION AGC/IRIS CONTROL
CLAMP
S/H
PG CLP
AGC
AGC CLP
AGC CONT
LPF
BLK CLP
MIX
GC
CS CONT
MIX CONT
BAND GAP REG
SAMPLING
Q009 (1/2)
BUFFER
Q007, 008
HOLD BUFFER
FL181
LPF
Q183
BUFFER
DT-74 BOARD ㉔
DT-74 BOARD ㉑
DT-74 BOARD ⑲
DT-74 BOARD ⑳
IC002
CCD DEFECT COMPENSATOR
IC003
ROM
Q006
Q104, 105
AGC DEF
Q131-134
V SUB REG
V SUB CONT
IC001
V DRIVE
IC004
TIMING GENERATOR
Q001
10V REG
Q002-005
PG DRIVE
Q107
AGC CONT BUFFER
DT-74 BOARD ⑪, ⑫, ⑬
Q101
AGC DET
Q106
AGC SWITCH
X101
28.6363MHz OSC
Q142
BUFFER
AF CLOCK
DT-74 BOARD ⑨
DT-74 BOARD ⑦
IC302
EVR
IC252
EVR
28.375MHz
DT-74 BOARD ㊾
DT-74 BOARD ⑧
14.188MHz
DT-74 BOARD ㊿
IC141 (1/2)
SYNC GENERATOR
PHASE COMP
DIVIDER
Q141
4fsc SW
Q102, 103
IRIS DET
IC141 ①
IC141 ㉜
IC141 ㉛
IC141 ㉚
SHUTTER EN
OFFSET MIX
Y LPF OUT


IC181
MATRIX
IC182
1H DELAY
IC183
IC251
PROCESS
IC301
ENCODER
IC141 (1/2)
SYNC GENERATOR
SAMPLING
BUFFER
HOLD BUFFER
SHUTTER EN
PRE BLK
BLK CLP
DC OUT
CS OUT
CS GMN
CS SLICE
DE OUT
IRIS OUT
IRIS LEVEL
CLP 1
S1 OUT
S2 OUT
Y OUT
AGC OUT
WINDOW
IRIS 6dB
VG
FL181
LPF
Q183
Y IN
DT-74 BOARD ㉔
DT-74 BOARD ㉑
DT-74 BOARD ⑳
DT-74 BOARD ⑲
DT-74 BOARD ⑪, ⑫, ⑬
DT-74 BOARD ⑨
DT-74 BOARD ⑦
BOARD ⑧
Q107
AGC CONT BUFFER
SAGC CONT
CLP 0
XDL 1
XDL 2
CLP 2
CLP 3
ID
BACK LIGHT
Q101
AGC DET
Q106
AGC SWITCH
SHUTTER EN
DDS SO
DDS SCK
TG STB
X101
28.6363MHz OSC
Q142
BUFFER
AF CLOCK
S1 IN
S2 IN
C1 GAIN
C2 GAIN
Y1 GAIN
CLP O
CLP 2
AP CUT
AGC CONT
Q185,186
AP LEVEL CONT
SLICE
AP GAIN
OFFSET
Y IN
CLP
γ
Y γ CONT
5V
Vcc
1H DELAY
Q194
BUFFER
Y DL OUT
FL182
Q184
CLOCK
L183, C233
14.3MHz BPF
CO OUT
Q196
BUFFER
Q181,182
CLAMP
Q192 (1/2)
Q192 (1/2)
Q193 (1/2)
DL C1 IN
C1 OUT
DL C2 IN
Y0 OUT
DL Y1 IN
Y1 OUT
DL Y2 IN
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
CLAMP
1H DELAY
VDD(A)
VDD
VDD(D)
CLOCK
CLAMP
5V
C1
Y0
Y1
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
CS GAIN
CS Y OUT
VCS GAIN
COMP
SLICE
GC
MAX
LPF
Y0+Y2
1/2
MX-7 BOARD ㊱
Yγ1 IN
YH OUT
YL-YH OUT
SW
MIX
Y GAIN
YL IN
AGC MIX
Q189
BUFFER
Q190
LPF
Q191
BLANKING
CS Y
C BLK
HD MIX
HD(3)
Q187
Q188
YL-YH
YH
FL301
DELAY
Q195
BUFFER
IC181 ⑮
IC181 ⑫
IC181 ⑬
0.35Vp-p
0.3Vp-p
0.54Vp-p
0.4Vp-p
0.5Vp-p
0.7Vp-p
0.35Vp-p
4.8Vp-p
0.28Vp-p
B GAIN
R GAIN
DELTA B
DELTA R
C LEVEL
C PED
B CONT
R CONT
WWD+VD
GATE DET
R COMP
OFFSET CONT
G OUT
S1 IN
S3 IN
S2 IN
DC IN
MAT GAIN2
MAT GAIN1
MATRIX
PED
YL MATRIX 1
YL MATRIX 2
GATE
YL MIX
R-G
B-G
Y PED
Y-γ CONT
CLP 2
S AGC CONT
Q303
BLK
BURST LEVEL
B LEVEL CONT
LALT
4FSC
AF SC
1/2
1/2 & ALT
SC
HUE
BF
YL-YH
YH
R-Y
B-Y
CS-Y
CS AGC
MODULATOR
DET
MOD
SHP CLP
DLD
DLE NOISE
0.18μsec DELAY
SHP LEVEL
GAIN CONTROL
WHITE CLIP
Y FADER
Y LEVEL
SYNC LEVEL
Q308
D301
NOISE SLICE
IC301 ㊺
IC301 ①
IC301 ㊵
CL IN
CL OUT
HD
VD
SYNC
BLK
BF
FLD
LALT
WE
SYNC GENERATOR
PHASE COMP
DIVIDER
Q141
4fsc SW
4fsc
Q102,103
IRIS DET
YH(AF)
AGC CONT(3)
AF CLOCK
HD
VD
IRIS CONT
AUTO FOCUS
IC141 ①
IC141 ㉜
IC141 ㉛
IC141 ㉚
4.8Vp-p

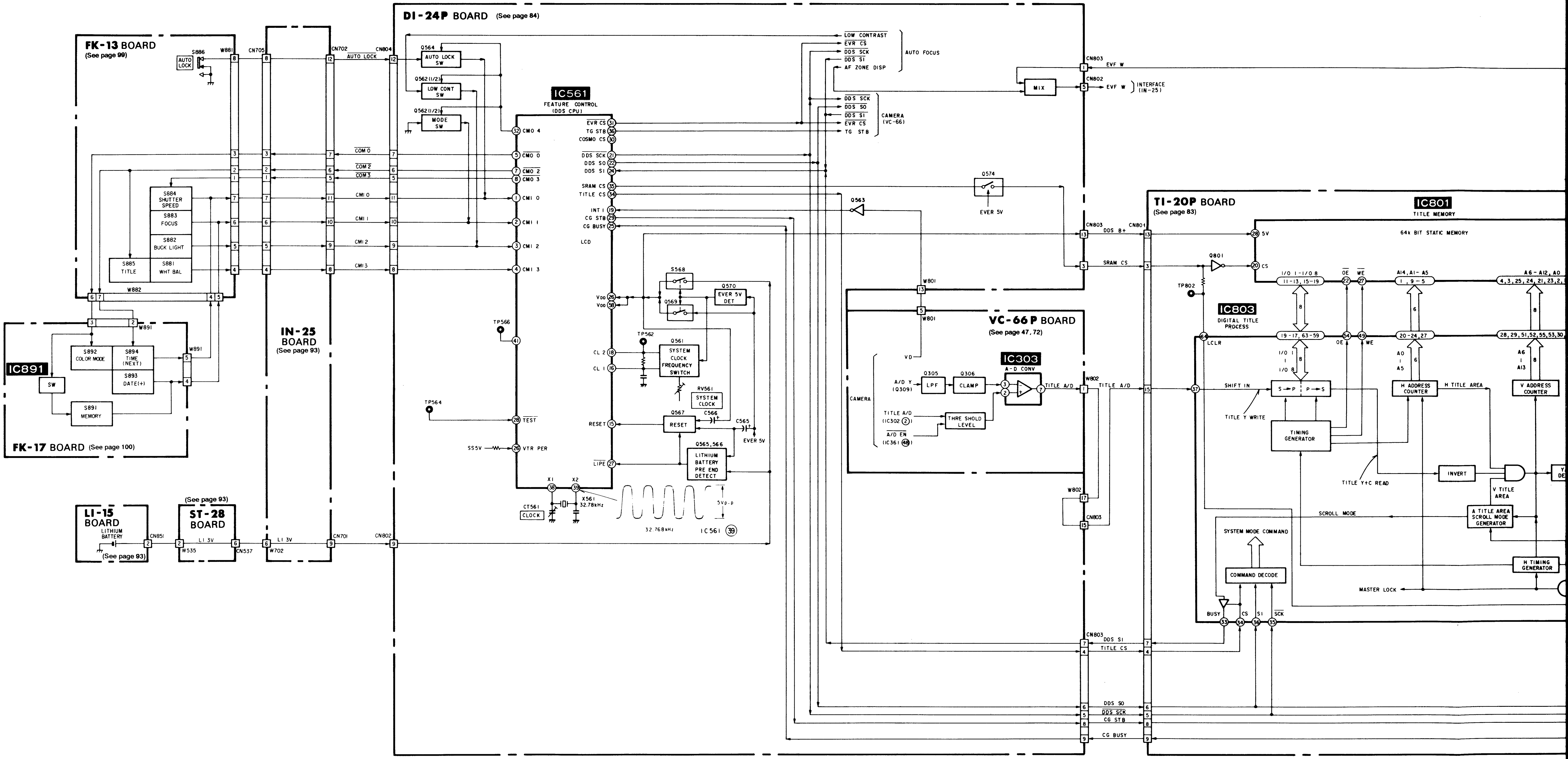

IC181
MATRIX
CLP O
LPF
CO OUT
CI OUT
DL CI IN
DL C2 IN
YO OUT
DLYI IN
YI OUT
DL Y2 IN
CI GAIN
C2 GAIN
YI GAIN
CLP O
CLP 2
AP CUT
SLICE
AP GAIN
OFFSET
Q196
BUFFER
Q181,182
CLAMP
Q192 (1/2)
Q193 (1/2)
IC182
1H DELAY
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
CLAMP
1H DELAY
VDD(A)
VDD
VDD(D)
CLOCK
CLAMP
XDL 2
XDL 1
CLP 3
5V
CI
YO
YI
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
CS GAIN
CS Y OUT
VCS GAIN
COMP
SLICE
MAX
GC
Q189
BUFFER
Q190
LPF
Q191
BLANKING
CS Y
C BLK
HD MIX
HD(3)
IC181 ⑮
0.35Vp-p
IC181 ⑫
0.3Vp-p
IC181 ⑬
0.54Vp-p
IC183
1H DELAY
Y IN
Y DL OUT
Vcc
Y γ CONT
CLOCK
Q194
BUFFER
FL182
LPF
Q184
BUFFER
YBI IN
L183, C233
14.3MHz BPF
Q195
BUFFER
MX-7 BOARD ㊱
0.4Vp-p
YH OUT
YL-YH OUT
SW
MIX
Y GAIN
YL IN
AGC MIX
Q187
BUFFER
Q188
LPF
YL-YH
FL301
DELAY
YH
AUTO FOCUS
IC251
PROCESS
B GAIN
R GAIN
DELTA B
DELTA R
C LEVEL
C PED
B CONT
R CONT
WWD+VD
C-PED
R COMP
OFFSET CONT
G OUT
R-Y HUE
B-Y HUE
R-Y GAIN
B-Y GAIN
S1 IN
S3 IN
S2 IN
DC IN
MAT GAIN2
MAT GAIN1
MATRIX
GATE DET
PED
YL MATRIX 1
YL MATRIX 2
LB
GATE
CLP
R-G
B-G
R-Y OUT
B-Y OUT
C-γ CONT
YL-YH OUT
YH OUT
YL MIX
Y PED
Y-γ CONT
CLP 2
Vcc
TITLE PEDESTAL
IC253
BLANKING/CLAMP
CLAMP
BLANKING
PED
Q254
TITLE (R-Y) MIX
Q255
LPF
Q256
TITLE (B-Y) MIX
Q257
TY MATRIX
TR
TB
TY
IC253 ⑥
0.6Vp-p
IC253 ⑤
0.34Vp-p
0.76Vp-p
IC301 ㉔
CHECK POINT ARRAY
OFFSET MIX
Y(LPF) OUT
SHTTER EN
YO
YI
CO
CI
V SUB
CCD OUT
ID(2)
YH(MIX OUT)
CAM Y
CAM C
OFFSET CONT
G OUT CHK
GND
AW ADJ
CAM ADJ
IC301
ENCODER
R-Y
B-Y
CS-Y
CS AGC
B LEVEL CONT
LALT
AF SC
HUE
BF
YL-YH
YH
MODULATOR
DET
BLANKING FADER SUPRESS
C OUT
C IN
Vcc(D)
Vcc(A)
FADER
VIDEO OUT
CLP 2
CHRACTER
EVF OUT
CAM Y OUT(1)
SYNC CHARACTER MIX
BURST GATE
MOD
1/2 & ALT
1/2
SC
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
DL D
DLE NOISE
0.18μsec DELAY
SHP LEVEL
Y LEVEL
SYNC LEVEL
WC
SET UP
SYNC
BLK
Q308
Q307
D301
NOISE SLICE
C BLK
Q303
S AGC CONT
BURST LEVEL
4FSC
IC301 ㊺
1.5Vp-p
IC301 ①
0.28Vp-p
IC301 ㊵
0.5Vp-p
FL304
3.58MHz BPF
Q302
BUFFER
Q311
MIX
Q304
DELAY
Q331
BUFFER
W803
VIDEO OUT
EVF OUT
DI-24P BOARD
W802
TB
TG
TR
C BLK
TY CHR
W801
VD
HD
A/D Y
AD EN
TITLE A/D
DIGITAL TITLE
CHARACTER

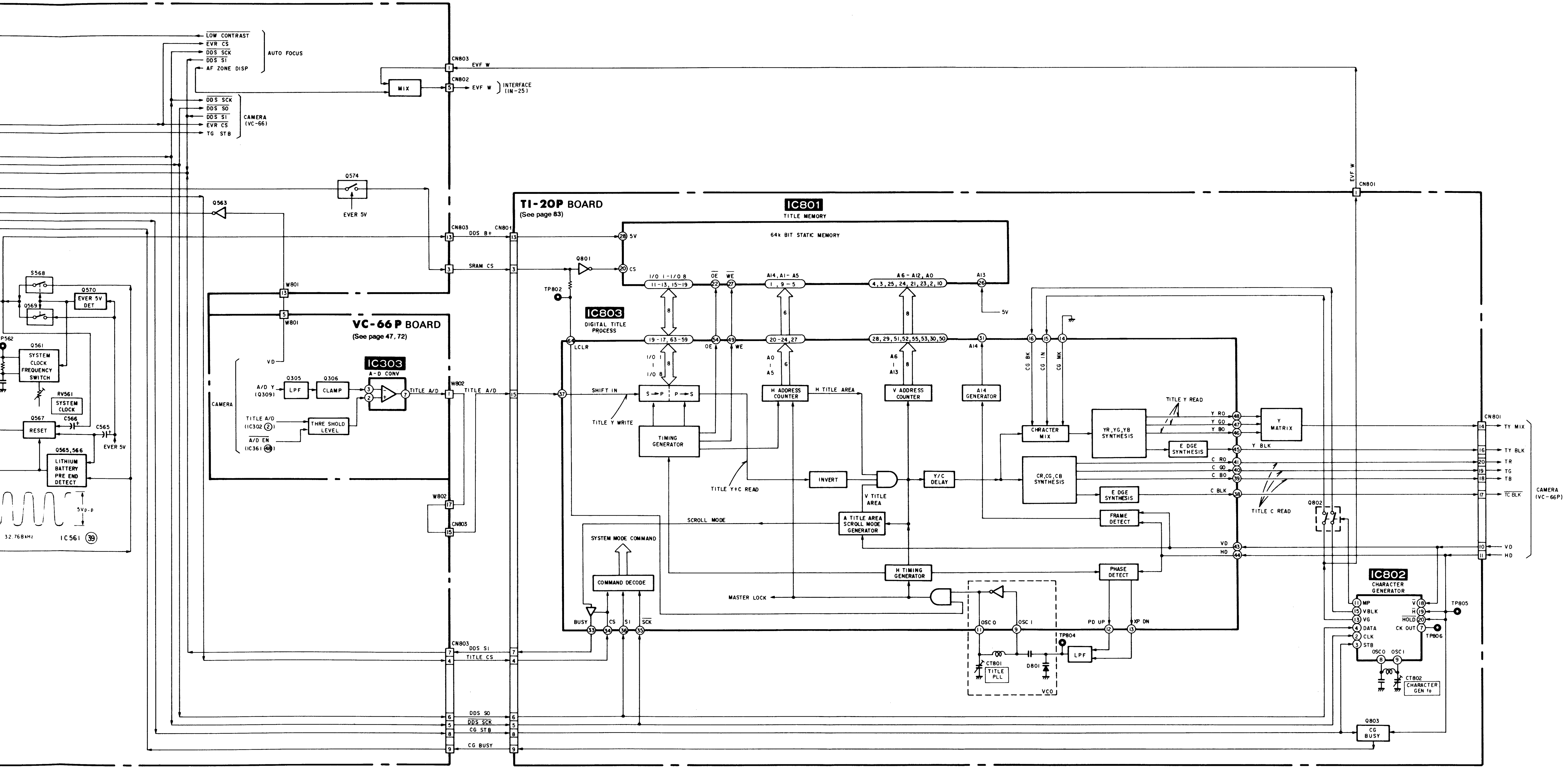
## 3-4. AUTO-FOCUS BLOCK DIAGRAM


DI-24P BOARD (AUTO FOCUS)
(See page 84)
LD-20P BOARD (See page 67)
ST-28 BOARD (See page 93)
IN-25 BOARD (See page 93)
CAMERA (VC-66 BOARD)
IRIS CONT (Q102)
MAX GAIN
V SUB CONT
AGC REF
MACRO (IC361 ⑮)
AF CLK (4FSC) (Q142)
(DT-74 ⑦) VD(2)
(DT-74 ⑧) HD(2)
AGC CONT(3) (Q107)
YH (AF) (Q195)
Q613 HPF 1
Q614 HPF 2
Q619 AMP
FL610 LPF
Q620,621 RECT
HALL OUT
AGC CONT
IC612 AF PROCESS
CKP
MC IN
VD
HD
SO IN
2 TO 1 ANALOG SW
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
N C
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF ZONE DISP
MCO 8
AREA
XCS
SCK
SI
SC
XRST
ADIO
ADI5
ADCK
ADCV
IC614
V IN
CLK
A/D CONVERTER
DO
D5
(IC615 ⑦) REF 2V
(IC615 ①) REF 1V
VRT
VRB
IC615 AD REF
5V
REF 2V
REF 1V
IC614 RESET
IC613 AUTO FOCUS CPU
MACRO
CAM 5V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
FOCUS ∞
FOCUS N
AFSSW
DASTB
IC611 EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
AGC REF
V SUB CONT
N.C.
Q611 BUFFER
Q610 (1/2)
DIGITAL TITLE
DDS SI
DDS SCK
LOW CONTRAST
EVR CS
AF ZONE DISP
ZP
REF 1V (IC615 ⑦)
REF 2V (IC615 ①)
IRIS CONT
CN805
W701
CN802
REF 1V
REF 2V
IRIS ADJ
Q708 BUFFER
HALL OS
HALL OUT
FOCUS SPEED
FOCUS REF
FOCUS N
FOCUS ∞
FOCUS FG
ZOOM TELE
ZOOM WIDE
FOCUS FAR
FOCUS NEAR
IC702 (1/2)
Q705,706
FOCUS REG
Vcc
IC703
IN1
IN2
AUTO FOCUS MOTOR DRIVE
OUT 1
OUT 2
Q707
IC702 (2/2)
FG DETECT
P GND
D GND
IC701
ZOOM MOTOR DRIVE
ZOOM SWITCH BLOCK
W
T
CN536
CN537
CN701
J STB
MOSI
SCK
AF JIG


LD-20P BOARD (See page 67)
IC613
AUTO FOCUS CPU
IC611
EVR
IC704 (1/2)
IRIS DRIVE
IC704 (2/2)
HALL AMP
IC702 (1/2)
FOCUS REG
IC702 (2/2)
FG DETECT
IC703
AUTO FOCUS MOTOR DRIVE
IC701
ZOOM MOTOR DRIVE
Q708 BUFFER
Q709 HALL OS BUFFER
Q611 BUFFER
Q704 CURRENT DETECT
Q703 CAM 5V DETECT
Q701, Q702 CURRENT DETECT
Q705, 706
Q707
PS701
RV701 HALL
LENS BLOCK
ZOOM POSITION
M904 IRIS MOTOR
M905 (1/2) FOCUS MOTOR
M905 (1/2) ZOOM MOTOR
S901 FOCUS END SWITCH
ZOOM SWITCH BLOCK
ST-28 BOARD (See page 93)
IN-25 BOARD (See page 93)
AF JIG
CN805
CN802
CN705
CN702
CN703
CN704
W701
CN536
CN537
CN701
ZP
REF 1V
REF 2V
IRIS CONT
IRIS ADJ
DRIVE (+)
CONT (+)
CONT (−)
HALL (+)
HALL (−)
BIAS (+)
HALL OS
HALL OUT
FOCUS SPEED
FOCUS REF
FOCUS N
FOCUS ∞
FOCUS FG
FOCUS ND
FOCUS FD
ZOOM TELE
ZOOM WIDE
ZOOM W
ZOOM T
FOCUS FAR
FOCUS NEAR
AU UNREG
CAM 5V
MACRO
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
FSPD 3
FSPD 2
FSPD 1
FSPD 0
SS OUT
ZOOM T
ZOOM W
AFSSW DASTB
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
AGC REF
V SUB CONT
N.C.
IP SG
AF ZONE DISP
MCO 8
SI
SC
XRST
AD10
AD15
Q610 (1/2)
14

## 3-5. DIGITAL TITLER BLOCK DIAGRAM


FK-13 BOARD (See page 99)
S886 AUTO LOCK
W881
S884 SHUTTER SPEED
S883 FOCUS
S882 BUCK LIGHT
S885 TITLE
S881 WHT BAL
W882
FK-17 BOARD (See page 100)
IC891
SW
W891
S892 COLOR MODE
S894 TIME (NEXT)
S893 DATE(+)
S891 MEMORY
IN-25 BOARD (See page 93)
CN705
CN702
CN804
CN701
CN802
W702
LI-15 BOARD
LITHIUM BATTERY
(See page 93)
CN851
ST-28 BOARD
(See page 93)
LI 3V
W535
CN537
DI-24P BOARD (See page 84)
AUTO LOCK
Q564 AUTO LOCK SW
Q562 (1/2) LOW CONT SW
Q562 (1/2) MODE SW
COM 0
COM 2
COM 3
CMI 0
CMI 1
CMI 2
CMI 3
IC561
FEATURE CONTROL (DDS CPU)
CMO 4
CMO 0
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
EVR CS
TG STB
COSMO CS
DDS SCK
DDS SO
DDS SI
SRAM CS
TITLE CS
INT 1
CG STB
CG BUSY
LCD
VDD
VDD
CL 2
CL 1
TEST
VTR PER
SS5V
RESET
LIPE
X1
X2
TP566
TP564
TP562
S568
S569
Q570 EVER 5V DET
Q561 SYSTEM CLOCK FREQUENCY SWITCH
RV561 SYSTEM CLOCK
Q567 RESET
C566
C565
EVER 5V
Q565,566 LITHIUM BATTERY PRE END DETECT
CT561 CLOCK
X561 32.78kHz
5Vp-p
32.768kHz
IC561 (39)
LOW CONTRAST
EVR CS
DDS SCK
DDS SI
AF ZONE DISP
AUTO FOCUS
DDS SCK
DDS SO
DDS SI
EVR CS
TG STB
CAMERA (VC-66)
Q574
EVER 5V
Q563
CN803
EVF W
CN802
MIX
EVF W
INTERFACE (IN-25)
CN803
DDS B+
SRAM CS
W801
VC-66P BOARD (See page 47, 72)
IC303
A-D CONV
VD
CAMERA
A/D Y (Q309)
Q305 LPF
Q306 CLAMP
TITLE A/D
TITLE A/D (IC302 (2))
A/D EN (IC361 (48))
THRE SHOLD LEVEL
W802
TITLE A/D
CN803
DDS SI
TITLE CS
DDS SO
DDS SCK
CG STB
CG BUSY
TI-20P BOARD (See page 83)
CN801
IC801
TITLE MEMORY
64k BIT STATIC MEMORY
5V
CS
Q801
TP802
I/O 1-I/O 8
OE
WE
A14, A1-A5
A6-A12, A0
IC803
DIGITAL TITLE PROCESS
LCLR
I/O 1 I I/O 8
A0 I A5
A6 I A13
SHIFT IN
S→P
P→S
TITLE Y WRITE
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
INVERT
TITLE Y+C READ
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
SCROLL MODE
SYSTEM MODE COMMAND
COMMAND DECODE
MASTER LOCK
H TIMING GENERATOR
BUSY
CS
SI
SCK


LOW CONTRAST
EVR CS
DDS SCK
DDS SI
AF ZONE DISP
AUTO FOCUS
DDS SCK
DDS SO
DDS SI
EVR CS
TG STB
CAMERA (VC-66)
MIX
CN803
EVF W
CN802
EVF W
INTERFACE (IN-25)
Q574
EVER 5V
Q563
CN803
DDS B+
CN801
SRAM CS
W801
S568
Q569
Q570
EVER 5V DET
P562
Q561
SYSTEM CLOCK FREQUENCY SWITCH
RV561
SYSTEM CLOCK
Q567
RESET
C566
C565
EVER 5V
Q565,566
LITHIUM BATTERY PRE END DETECT
5Vp-p
32.768kHz
IC561 (39)
VC-66P BOARD
(See page 47, 72)
IC303
A-D CONV
VD
CAMERA
A/D Y (Q309)
Q305
LPF
Q306
CLAMP
TITLE A/D (IC302 ②)
A/D EN (IC361 (48))
THRE SHOLD LEVEL
TITLE A/D
W802
TITLE A/D
TI-20P BOARD
(See page 83)
IC801
TITLE MEMORY
64k BIT STATIC MEMORY
5V
CS
Q801
TP802
I/O 1-I/O 8
11-13, 15-19
OE
WE
A14, A1-A5
1, 9-5
A6-A12, A0
4, 3, 25, 24, 21, 23, 2, 10
A13
5V
IC803
DIGITAL TITLE PROCESS
LCLR
19-17, 63-59
OE
WE
20-24, 27
28, 29, 51, 52, 55, 53, 30, 50
A14
CG BK
CG IN
CG MK
I/O 1 I/O 8
A0 A5
A6 A13
SHIFT IN
TITLE Y WRITE
S→P
P→S
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
CHRACTER MIX
YR, YG, YB SYNTHESIS
TITLE Y READ
Y RO
Y GO
Y BO
Y MATRIX
E DGE SYNTHESIS
Y BLK
CR, CG, CB SYNTHESIS
C RO
C GO
C BO
E DGE SYNTHESIS
C BLK
TITLE C READ
TITLE Y+C READ
INVERT
Y/C DELAY
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
SCROLL MODE
FRAME DETECT
SYSTEM MODE COMMAND
COMMAND DECODE
VD
HD
H TIMING GENERATOR
PHASE DETECT
MASTER LOCK
BUSY
CS
SI
SCK
OSC O
OSC I
PD UP
XP DN
TP804
LPF
CT801
TITLE PLL
D801
VCO
Q802
CN801
TY MIX
TY BLK
TR
TG
TB
TC BLK
CAMERA (VC-66P)
VD
HD
EVF W
IC802
CHARACTER GENERATOR
MP
VBLK
VG
DATA
CLK
STB
V
H
HOLD
CK OUT
TP805
TP806
OSCO
OSCI
CT802
CHARACTER GEN fo
Q803
CG BUSY
DDS SI
TITLE CS
DDS SO
DDS SCK
CG STB
CG BUSY

## 3-6. SYSTEM CONTROL SECTION FUNCTION DESCRIPTION

The system control section consists of following three microcomputers:

- DDS microcomputer µPD7508BGB
- EVR microcomputer MC68HC05N4FU
- AF microcomputer MC68HC05C4FU

### 3-6-1. DDS microcomputer µPD7508BGB (IC561 on DI-24P Board)

#### 1. Function description

1) Internal data communication control
2) Date/time measurement
3) LCD indication
4) Reading of key matrix
   (White balance, electronic shutter, edit search +/ − , auto-lock, focus mode, counter reset, zero memory, title, store, color/mode, backlight compensation, date/forward, time/set, fader)

#### 2. Operation modes

- As shown in the chart below, the operation mode is shifted according to the position of the power switch (STANDBY/LOCK) and whether or not there is a main battery.

- **The main DDS microcomputer functions in each mode is as follows.**

| Mode | Main Battery | Power Switch | Microcomputer power supply | Clock Mode | Main Functions |
|---|---|---|---|---|---|
| BACK UP | No | STANDBY | LI 3V<br>(Lithium battery) | 500 ms period intermittent oscillation | ● Backup of title and tape counter data<br>● Clock count operation |
|  | Yes | LOCK |  |  |  |
| CAM ON | Yes | STANDBY | SS 5V<br>(Main battery) | Continuous oscillation | ● All camera features<br>● Indication control for white balance, focus, titles, electronics shutter, etc. |

### 3. Terminal function and input/output level ( μPD7508BGB)

| Pin No. | Signal Name | I/O | Functions and I/O Level |
|---|---|---|---|
| 1 | CMI 0 | I | Key matrix input signal. Normally "H". When key input, "L" pulse of 1V period. |
| 2 | CMI 1 | I | |
| 3 | CMI 2 | I | |
| 4 | CMI 3 | I | |
| 5 | $\overline{\mathrm{CMO\ 0}}$ | O | Key matrix output signal. "L" pulse of 1V period. |
| 6 | $\overline{\mathrm{CMO\ 1}}$ | O | |
| 7 | $\overline{\mathrm{CMO\ 2}}$ | O | |
| 8 | $\overline{\mathrm{CMO\ 3}}$ | O | |
| 15 | RESET | I | Normally "L". |
| 16 | CL 1 | I | System clock oscillation pin.<br>● When camera power ON:<br>Continuous oscillation (oscillation frequency approx. 330 kHz).<br>● When power OFF backed up by lithium battery:<br>500 ms intermittent oscillation (oscillation frequency approx. 70 kHz) |
| 18 | CL 2 | O | |
| 19 | INT 1 | I | Interrupt input by camera VD.<br>"H" pulse of 1V period. |
| 21 | $\overline{\mathrm{DDS\ SCK}}$ | I/O | Serial communication and serial clock input/output.<br>V period "L" pulse train. |
| 22 | DDS SO | O | Serial communication and data output.<br>V period "H" pulse train. |
| 24 | DDS SI | I | Serial communication and data input.<br>V period "L" pulse train. |
| 25 | CG BUSY | I | Busy signal input from character generator.<br>V period "H" pulse train. |
| 26 | VTR PWR | I | SS 5V power detection. "H" when power on. |
| 27 | LIPE | I | Lithium battery pre-end detection. Normally "H". "L" when lithium battery voltage drops. |
| 28 | $\overline{\mathrm{TEST}}$ | I | Test mode input. Normally "H". |
| 29 | CG STB | O | Strobe signal for character generator.<br>1V period "H" pulse train. |
| 30 | NC | O | |
| 31 | $\overline{\mathrm{EVR\ CS}}$ | O | Chip select signal to EVR microcomputer (IC361 on DI-24P board).<br>"L" pulse of 1V period. |
| 32 | CMO 4 | O | Key matrix output signal. "H" pulse of 1V period. |
| 34 | TITILE CS | O | Chip select signal to title controller (IC801 on TI-20P board).<br>1V period "H" pulse train. |
| 35 | SRAM CS | O | Chip select signal to (IC801 on TI-20P board).<br>"H" during title operation. |
| 36 | TG STB | O | Strobe signal to timing generator (VC-66P board, DT-74 board).<br>1V period "H" pulse train. |
| 38 | X1 | I | Crystal oscillation circuit for clock. Oscillation frequency is 32.768 kHz. |
| 39 | X2 | O | |

### 3-6-2. EVR microcomputer MC68HC05N4FU (IC361 on VC-66P Board)

#### 1. Function description

1) EVR control
2) Auto white balance control
3) Electronic shutter

#### 2. Pin function and input/output level (MC68HC05N4FU)

| Pin No. | Signal Name | I/O | Functions and I/O Level |
|---|---|---|---|
| 1 | ——— | | ——— |
| 2 | $\overline{\text{SSW}}$ | O | "H" only during communicating with serial switching D/A converter. "H" pulse of V period. |
| 3 | $\overline{\text{SCLK}}$ | O | Serial clock output. V period "L" pulse train. |
| 4 | SI | I | Serial data input. V period "H" pulse train. |
| 5 | SO | O | Serial data output. V period "L" pulse train. |
| 6 | $\overline{\text{EVR CS}}$ | I | Communication request from DDS. "L" pulse of V period. |
| 7 | L IN | I | LANC input. L: 0, H: 1. V period "H" pulse train. |
| 8 | L OUT | O | LANC output. L: 0, H: 1. V period "H" pulse train. |
| 9 | $\overline{\text{CAM ADJ}}$ | I | NORMAL/ADJUST selection. Normally "H". "L" during adjustment. |
| 10 | N.C | | |
| 11 | SSW | O | Serial signal switching. "L" pulse of V period. |
| 12, 13 | LD | O | Data load instruction to EVR (IC252, IC302). "H" pulse of V period. |
| 14 | $\overline{\text{BACK LIGHT}}$ | O | "L" during backlight compensation ON. |
| 15 | IN/$\overline{\text{OUT}}$ | I | Control from AF microcomputer, Indoor (IN): H, outdoor (OUT): L according to brightness. |
| 16 | ——— | | |
| 17 | VDD | | Connected to EVER 5V. |
| 18 | | | GND |
| 19 | ——— | – | |
| 20 | PAL/$\overline{\text{NTSC}}$ | I | Broadcast system selection. L: NTSC, H: PAL. |
| 21 | GND | | ——— |
| 22 | GND | | ——— |
| 23 | GND | | ——— |
| 24, 25 | GND | | ——— |
| 26 | GND | – | ——— |
| 27 | GND | – | ——— |
| 28 | CAM 5V | I | Camera power on monitoring. L: CAM OFF, H: CAM ON. |
| 29 | AW IN | I | AWB A/D timer stop. Pattern drive interrupt. Normally ??V period pulse. |
| 30 | AW ADJ | O | AWB preset data fetch. Normally "L". "H" during auto white balance adjustment. |
| 31 | ——— | – | NC |
| 32 | ——— | – | ——— |
| 33 | ——— | – | ——— |
| 34 | S3SW | O | AWB measurement signal selection. "H" pulse of 3V period. |
| 35 | S2SW | O | AWB measurement signal selection. "H" pulse of 3V period. |
| 36 | DISCHG | O | Capacitor reset pulse for timer measurement lamp voltage generation. "H" pulse of V period. |
| 37 | ——— | – | ——— |
| 38 | S1SW | O | AWB measurement signal selection. "H" pulse of 3V period. |
| 39 | ——— | – | ——— |
| 40 | OSC2 | O | Built-in inverter output for oscillation. Oscillation frequency: 4 MHz. |
| 41 | OSC1 | I | Built-in inverter input for oscillation. |
| 42 | VDD | | Connected to EVER 5V. |
| 43 | ——— | | ——— |
| 44 | $\overline{\text{RESET}}$ | | Normally "H". "L" when reset. |
| 45 | $\overline{\text{IRQ}}$ | | Connected to $\overline{\text{EVR CS}}$ signal. "L" pulse of V period. |
| 46 | ——— | – | Normally "H". "L" when reset. |
| 47 | ——— | – | Normally "H". "L" when reset. |
| 48 | $\overline{\text{A/D}}$ EN | O | 1-bit A/D converter operation ON/OFF output for titler. Normally "H". "L" for 7V period when title store button (S762 on CF-4 board) pressed. |

### 3-6-3. AF microcomputer MC68HC05C4FU (IC613 on VC-66P Board)

#### 1. Function description

1) AF control
2) Power focus
3) Zoom motor drive

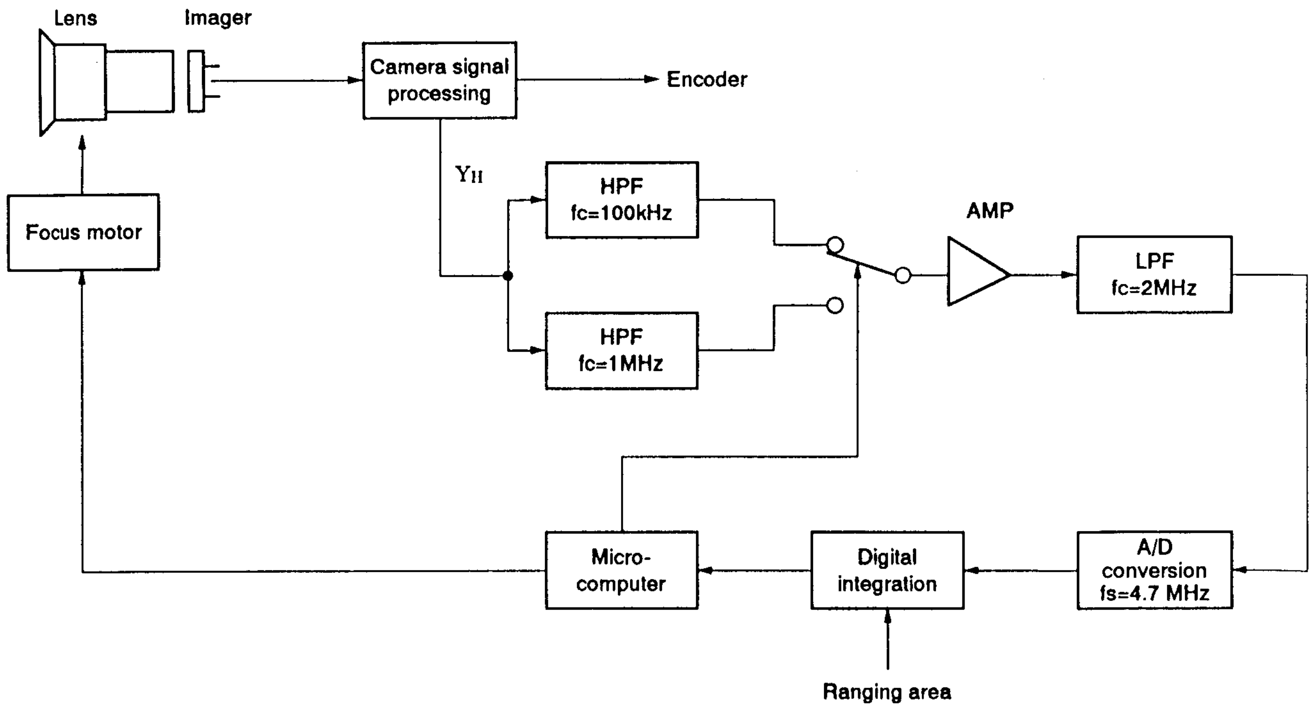
#### 2. Auto focus system of this unit (A-AF: Image processing system)

The high frequency components of video signal (actually luminance signal) are microcomputer processed by TTL without using external sensors to control the focus).

#### 3. Outline of operation

The frequency components from 100k to 2 MHz and from 1M to 2 MHz are extracted from the luminance (Y) signal, and these are digitally integrated for each field. This integration value is called the evaluation value. This evaluation value becomes the information for auto focusing, and focus ring is controlled by finding the peaks in the evaluation values based on the concepts that:

Picture is in focus → edges of image become clearer → high frequency components of image increase → evaluation value increases

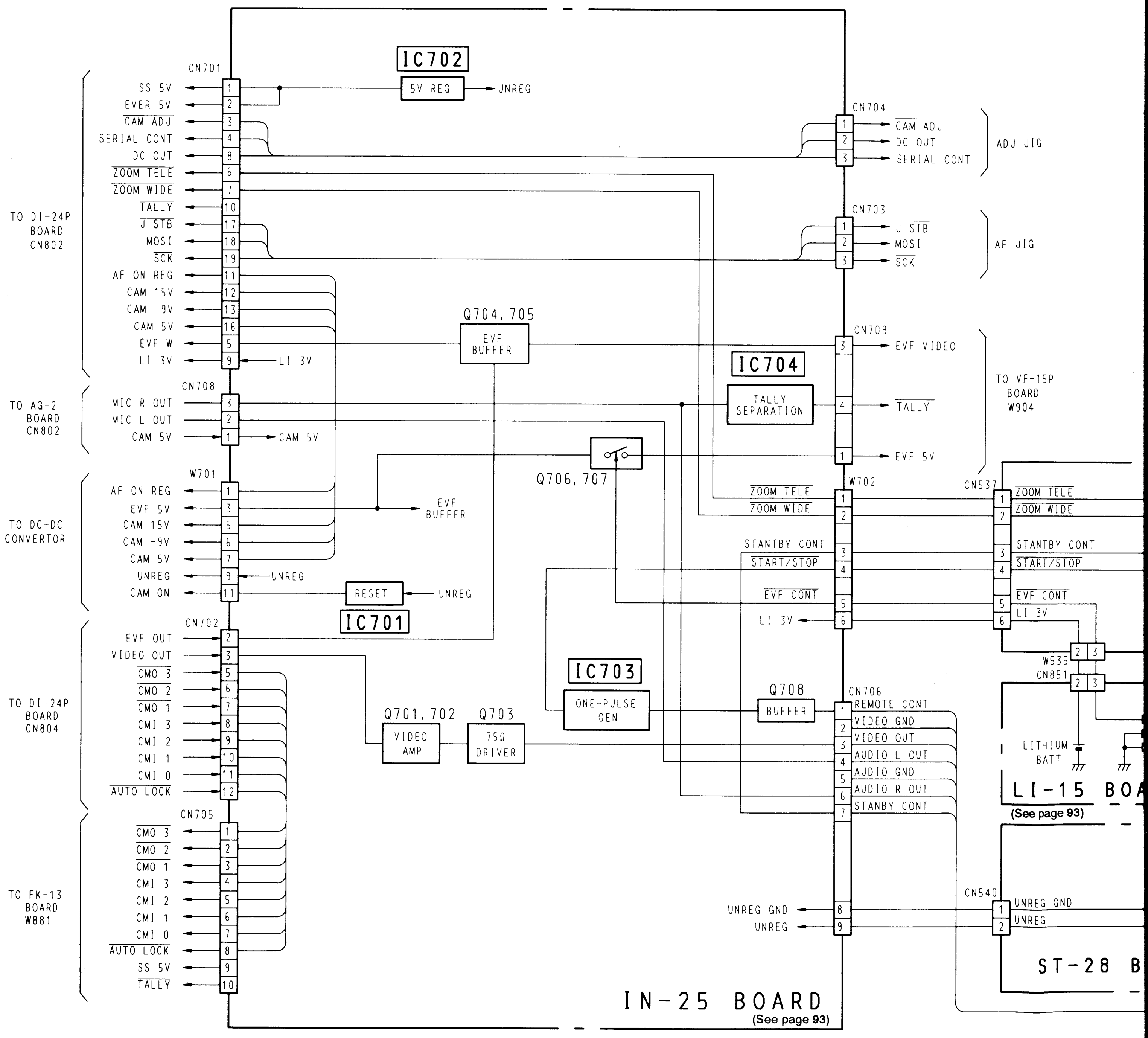


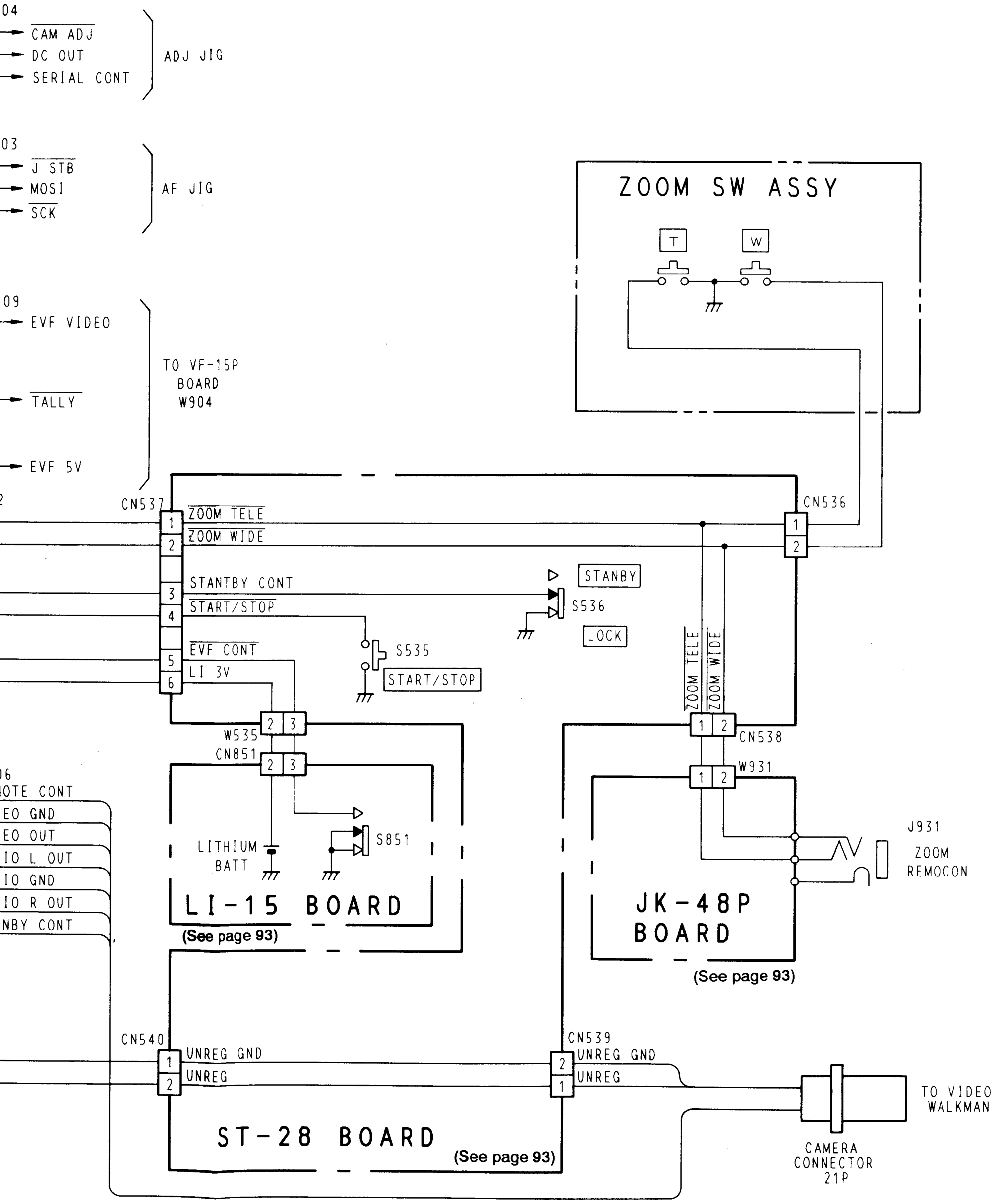
#### 4. Pin function and Input/output level (MC68HC05C4FU)

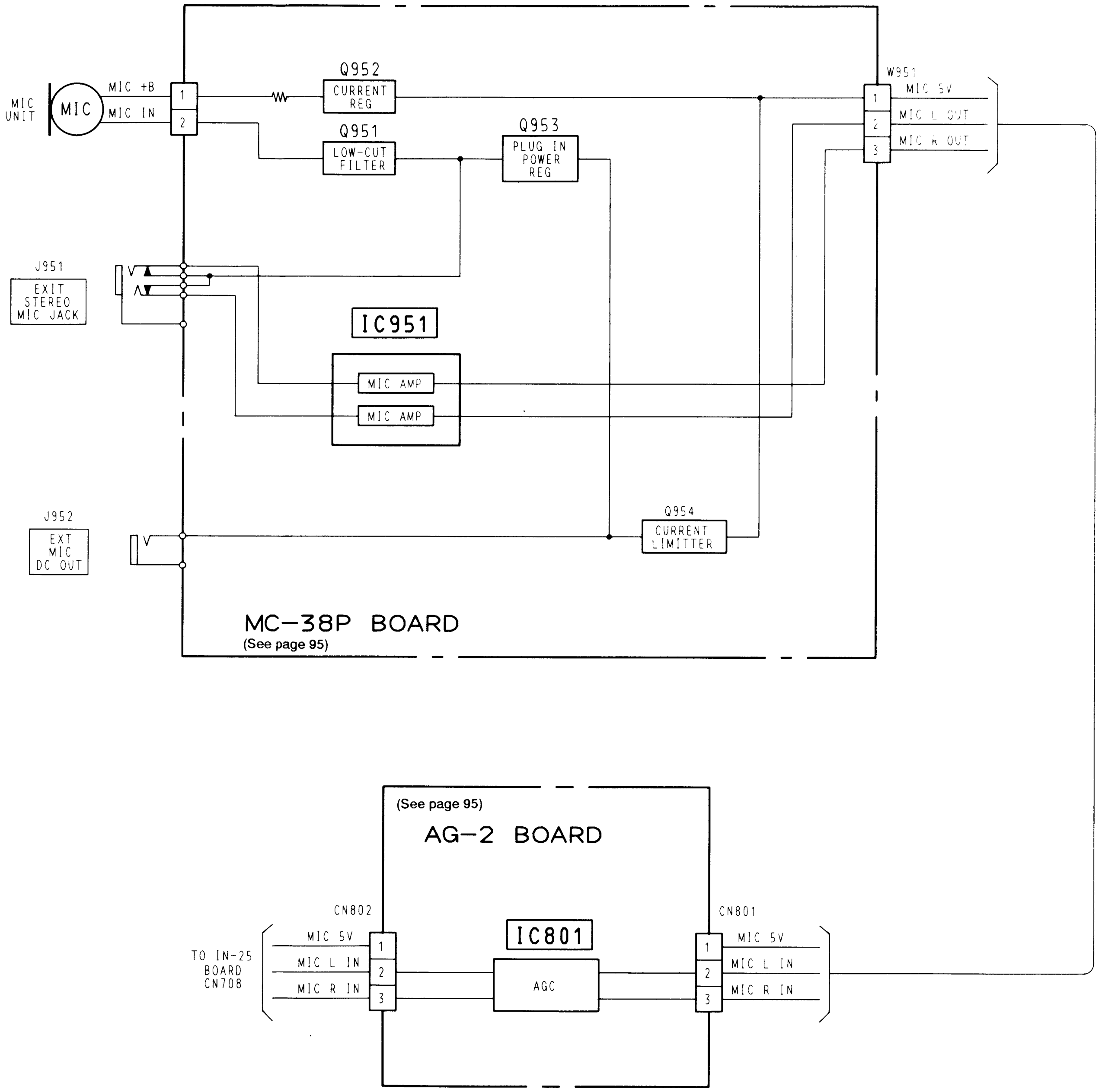
| Pin No. | Signal Name | I/O | Functions and I/O Level |
|---|---|---|---|
| 1 | $\overline{\text{SS}}$ OUT | O | EVR data read timing output (PD5 SS input). V period "L" pulse train. |
| 2 | IN/$\overline{\text{OUT}}$ | O | Indoors/outdoors determination according to aperture value. "H" for indoors and "L" for outdoors. |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | $\overline{\text{LOW CONTRAST}}$ | O | Signal to DDS microcomputer (IC561 on DI-24P board). "L" when subject has low contrast. |
| 7 | —— | – | |
| 8 | | | Not used. |
| 9 | —— | – | |
| 10 | —— | – | |
| 11 | $\overline{\text{ZOOM T}}$ | O | Normally "H". "L" when zoom motor is rotated in telephoto direction by remote commander. |
| 12 | $\overline{\text{ZOOM W}}$ | O | Normally "H". "L" when zoom motor is rotated in wide angle direction by remote commander. |
| 13 | Focus N | O | Normally "L". "H" when focus motor is rotated in close range direction. |
| 14 | —— | – | |
| 15 | Focus F | O | Normally "L". "H" when focus motor is rotated in far range direction. |
| 16 | F SPD 0 | O | 0 bit (LSB) of focus motor speed control signal. |
| 17 | —— | – | |
| 18 | F SPD1 | O | 1 bit of focus motor speed control signal. |
| 19 | F SPD2 | O | 2 bits of focus motor speed control signal. |
| 20 | —— | – | |
| 21 | F SPD3 | O | 3 bits (MSB) of focus motor speed control signal. |
| 22 | —— | – | |
| 23 | Vss | – | Connected to GND. |
| 24 | Vss | – | Connected to GND. |
| 25 | —— | – | |
| 26 | $\overline{\text{Focus NEAR}}$ | I | "L" when focus ring is at close range edge. |
| 27 | —— | – | |
| 28 | —— | – | |
| 29 | —— | – | |
| 30 | $\overline{\text{FOCUS FAR}}$ | I | "L" when focus ring is at far range edge. |
| 31 | AF SSW | O | Timing output for bus selection. "H" pulse of V period. |
| 32 | —— | – | |
| 33 | DA STB | O | D/A converter for AF. For data latch. V period "H" pulse train. |
| 34 | PAL/$\overline{\text{NTSC}}$ | I | PAL/NTSC selection. |
| 35 | —— | – | |
| 36 | $\overline{\text{J STB}}$ | O | External display jig. For data latch. "L" pulse of V period. |
| 37 | XCS | O | Active "L" for communication request to IC612 CXD-1204. "L" pulse of V period. |
| 38 | TEST | I | Connected to VDD. |
| 39 | —— | – | |
| 40 | MODE | I | Connected to VDD. |
| 41 | MISO | I/O | SPI MASTER: in...SLAVE: out...V period "H" pulse train. |
| 42 | MOSI | I/O | SPI MASTER: out...SLAVE: in...V period "L" pulse train. |
| 43 | $\overline{\text{SCK}}$ | I/O | SPI SERIAL CLOCK. V period "L" pulse train. |
| 44 | —— | – | |
| 45 | $\overline{\text{SS}}$ | I | V period "L" pulse train. |
| 46 | —— | – | |

| Pin No. | Signal Name | I/O | Functions and I/O Level |
|---|---|---|---|
| 47 | ——— | – | |
| 48 | $\overline{\text{EVR CS}}$ | I | EVR data communication request ↓ from DDS microcomputer. "L" pulse of V period. |
| 49 | ——— | – | |
| 50 | ——— | – | |
| 51 | $\overline{\text{Focus FG}}$ | I | Interrupt generation by Focus motor FG ↓ . "H" when auto focus OFF.<br>"L" pulse of period according to Focus motor rotation speed when auto focus ON. |
| 52 | CLK OUT | O | Waveform shaped output of Pin (54) clock (1.79 MHz) |
| 53 | ——— | – | |
| 54 | CLK IN | I | External clock input. 14.3 MHz clock input to Pin ㉘ of IC612 is divided by 8. |
| 55 | VDD | | CAM 5V |
| 56 | ——— | – | |
| 57 | ——— | – | |
| 58 | ——— | – | |
| 59 | ——— | – | |
| 60 | $\overline{\text{SYS RST}}$ | I | Normally "H". "L" when resetting. |
| 61 | AREA | I | Interrupt generation by ↓ rom CXD-1204 (IC612). V period pulse |
| 62 | VPP | | CAM 5V |
| 63 | WND W/$\overline{\text{N}}$ | I | Auto focus ranging area switching. Connected to VDD by 100 kΩ (Fixed to WIDE). |
| 64 | ——— | – | |

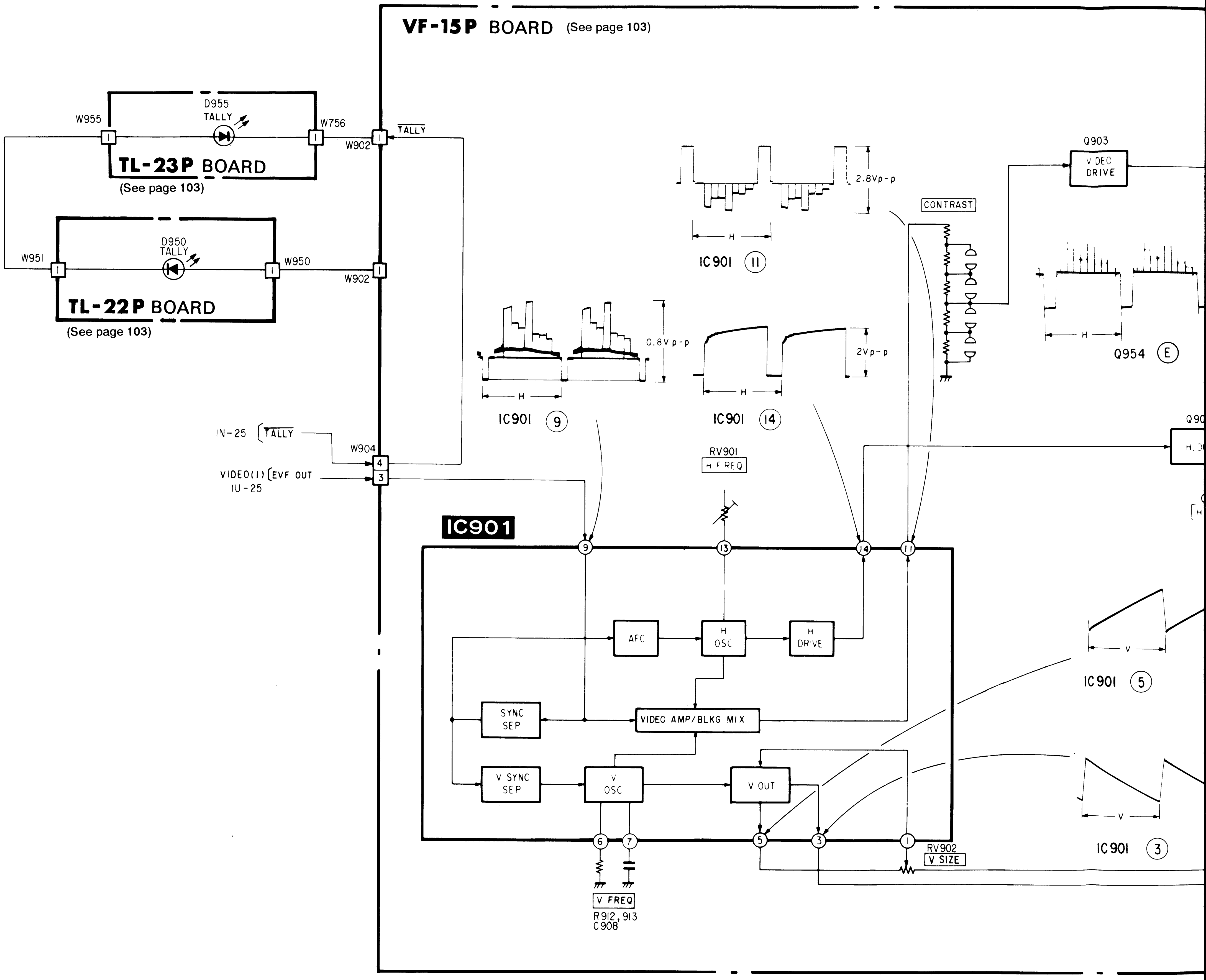
## 3-7. INTERFACE BLOCK DIAGRAM

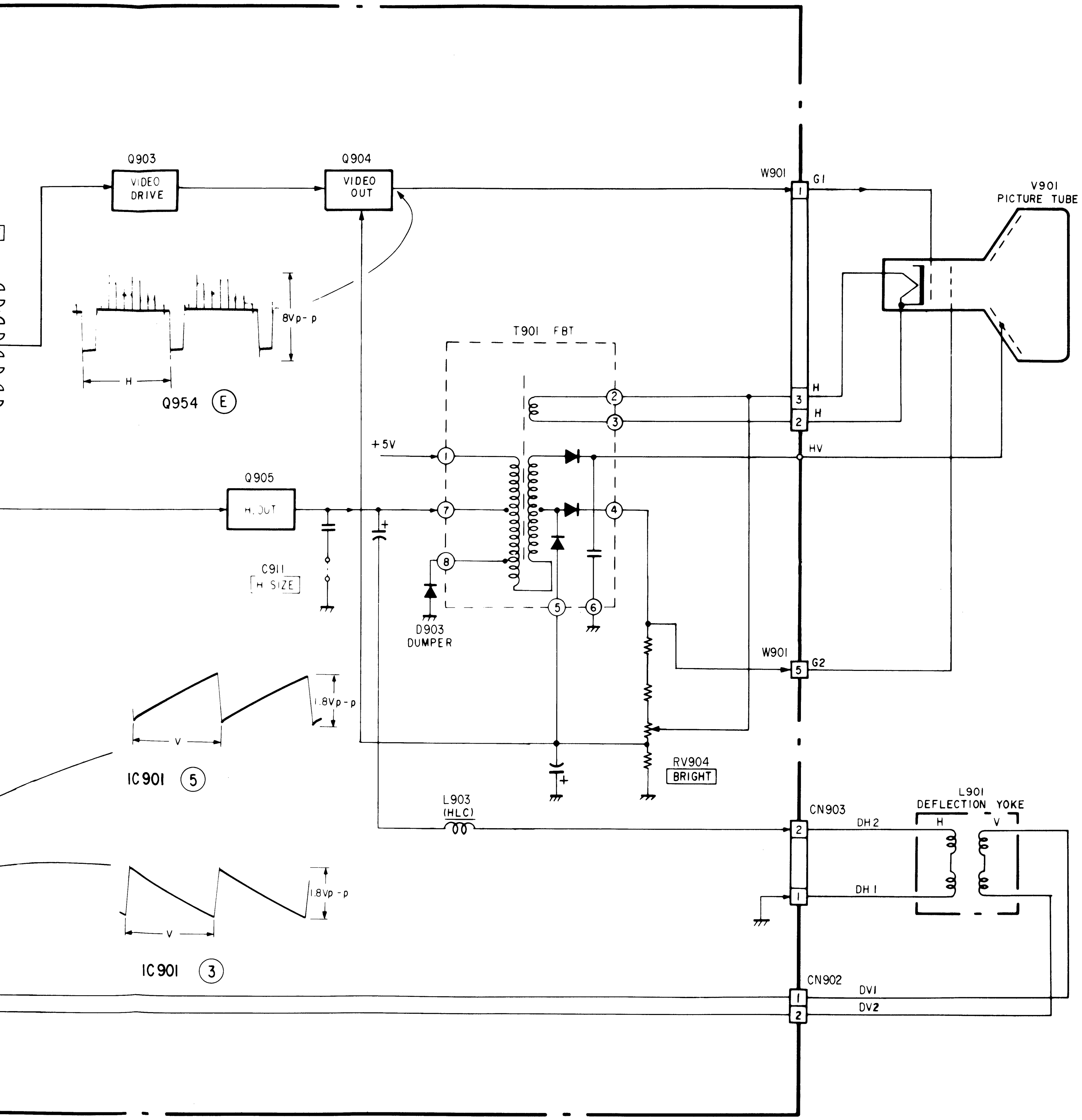

TO DI-24P BOARD CN802
CN701
SS 5V
EVER 5V
CAM ADJ
SERIAL CONT
DC OUT
ZOOM TELE
ZOOM WIDE
TALLY
J STB
MOSI
SCK
AF ON REG
CAM 15V
CAM -9V
CAM 5V
EVF W
LI 3V
IC702
5V REG
UNREG
Q704, 705
EVF BUFFER
TO AG-2 BOARD CN802
CN708
MIC R OUT
MIC L OUT
CAM 5V
TO DC-DC CONVERTOR
W701
AF ON REG
EVF 5V
CAM 15V
CAM -9V
CAM 5V
UNREG
CAM ON
RESET
IC701
Q706, 707
TO DI-24P BOARD CN804
CN702
EVF OUT
VIDEO OUT
CMO 3
CMO 2
CMO 1
CMI 3
CMI 2
CMI 1
CMI 0
AUTO LOCK
Q701, 702
VIDEO AMP
Q703
75Ω DRIVER
IC703
ONE-PULSE GEN
Q708
BUFFER
TO FK-13 BOARD W881
CN705
CMO 3
CMO 2
CMO 1
CMI 3
CMI 2
CMI 1
CMI 0
AUTO LOCK
SS 5V
TALLY
CN704
CAM ADJ
DC OUT
SERIAL CONT
ADJ JIG
CN703
J STB
MOSI
SCK
AF JIG
CN709
EVF VIDEO
IC704
TALLY SEPARATION
TALLY
EVF 5V
TO VF-15P BOARD W904
W702
ZOOM TELE
ZOOM WIDE
STANTBY CONT
START/STOP
EVF CONT
LI 3V
CN537
W535
CN851
LITHIUM BATT
LI-15 BOA
(See page 93)
CN706
REMOTE CONT
VIDEO GND
VIDEO OUT
AUDIO L OUT
AUDIO GND
AUDIO R OUT
STANBY CONT
UNREG GND
UNREG
CN540
ST-28 B
IN-25 BOARD
(See page 93)

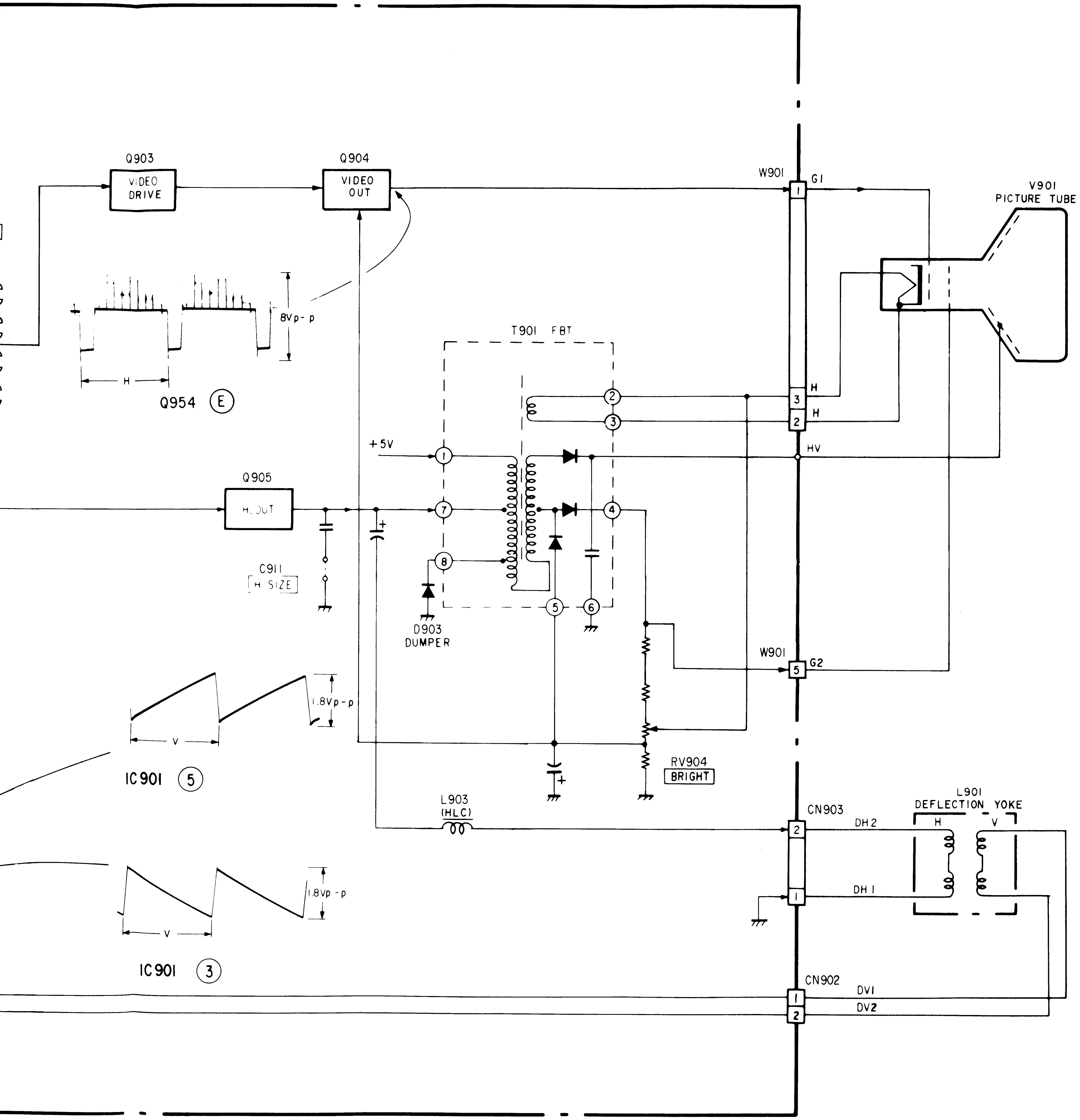

04
CAM ADJ
DC OUT
SERIAL CONT
ADJ JIG
03
J STB
MOSI
SCK
AF JIG
09
EVF VIDEO
TALLY
EVF 5V
TO VF-15P BOARD W904
ZOOM SW ASSY
T
W
CN537
ZOOM TELE
ZOOM WIDE
STANTBY CONT
START/STOP
EVF CONT
LI 3V
CN536
STANBY
S536
LOCK
S535
START/STOP
ZOOM TELE
ZOOM WIDE
CN538
W931
W535
CN851
LITHIUM BATT
S851
LI-15 BOARD
(See page 93)
JK-48P BOARD
(See page 93)
J931
ZOOM REMOCON
06
OTE CONT
EO GND
EO OUT
IO L OUT
IO GND
IO R OUT
NBY CONT
CN540
UNREG GND
UNREG
CN539
UNREG GND
UNREG
ST-28 BOARD
(See page 93)
TO VIDEO WALKMAN
CAMERA CONNECTOR 21P


MIC UNIT
MIC
MIC +B
MIC IN
Q952
CURRENT REG
Q951
LOW-CUT FILTER
Q953
PLUG IN POWER REG
W951
MIC 5V
MIC L OUT
MIC R OUT
J951
EXIT STEREO MIC JACK
IC951
MIC AMP
MIC AMP
J952
EXT MIC DC OUT
Q954
CURRENT LIMITTER
MC-38P BOARD
(See page 95)
(See page 95)
AG-2 BOARD
CN802
TO IN-25 BOARD CN708
MIC 5V
MIC L IN
MIC R IN
IC801
AGC
CN801
MIC 5V
MIC L IN
MIC R IN

## 3-8. VIEW FINDER BLOCK DIAGRAM

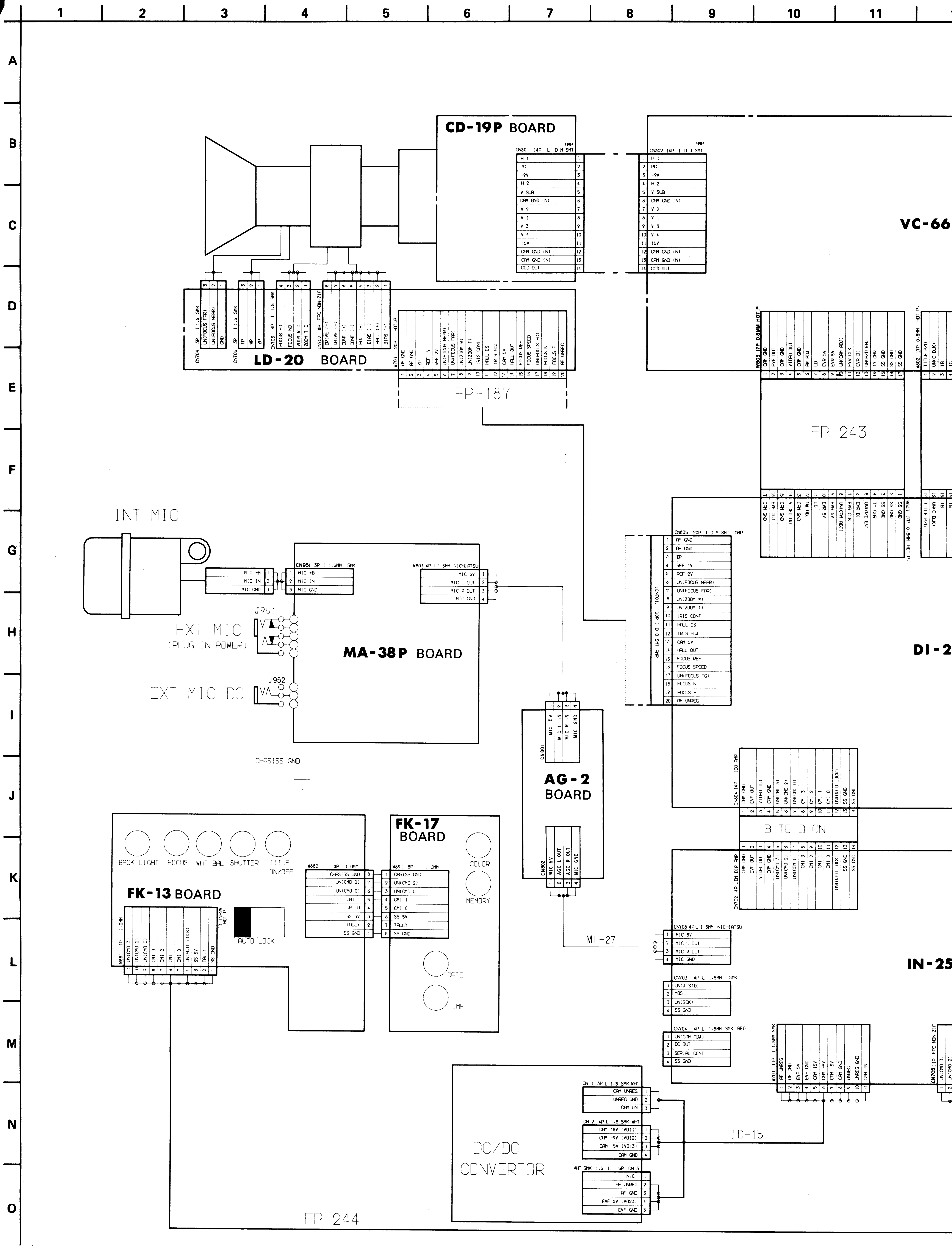

VF-15P BOARD (See page 103)
TL-23P BOARD
(See page 103)
TL-22P BOARD
(See page 103)
D955
TALLY
D950
TALLY
W955
W756
W902
W951
W950
W904
TALLY
IN-25
VIDEO(1)
EVF OUT
IU-25
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
RV901
H FREQ
RV902
V SIZE
V FREQ
R912, 913
C908
CONTRAST
Q903
VIDEO DRIVE
2.8Vp-p
0.8Vp-p
2Vp-p
H
V
IC901 ⑪
IC901 ⑨
IC901 ⑭
IC901 ⑤
IC901 ③
Q954 Ⓔ


Q903
VIDEO DRIVE
Q904
VIDEO OUT
W901
G1
V901
PICTURE TUBE
8Vp-p
H
Q954 (E)
T901 FBT
②
③
3
H
2
H
+5V
①
HV
Q905
H. OUT
⑦
④
⑧
⑤
⑥
C911
H SIZE
D903
DUMPER
W901
5
G2
1.8Vp-p
V
IC901 ⑤
RV904
BRIGHT
L903
(HLC)
CN903
2
DH2
L901
DEFLECTION YOKE
H
V
1
DH1
1.8Vp-p
V
IC901 ③
CN902
1
DV1
2
DV2


Q903
VIDEO DRIVE
Q904
VIDEO OUT
W901
G1
V901
PICTURE TUBE
8Vp-p
H
Q954 Ⓔ
T901 FBT
3
H
2
H
HV
+5V
Q905
H. OUT
C911
H SIZE
D903
DUMPER
W901
5
G2
1.8Vp-p
V
IC901 ⑤
RV904
BRIGHT
L903
(HLC)
CN903
DH2
L901
DEFLECTION YOKE
H
V
DH1
1.8Vp-p
V
IC901 ③
CN902
DV1
DV2

## SECTION 4

## PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM



1
2
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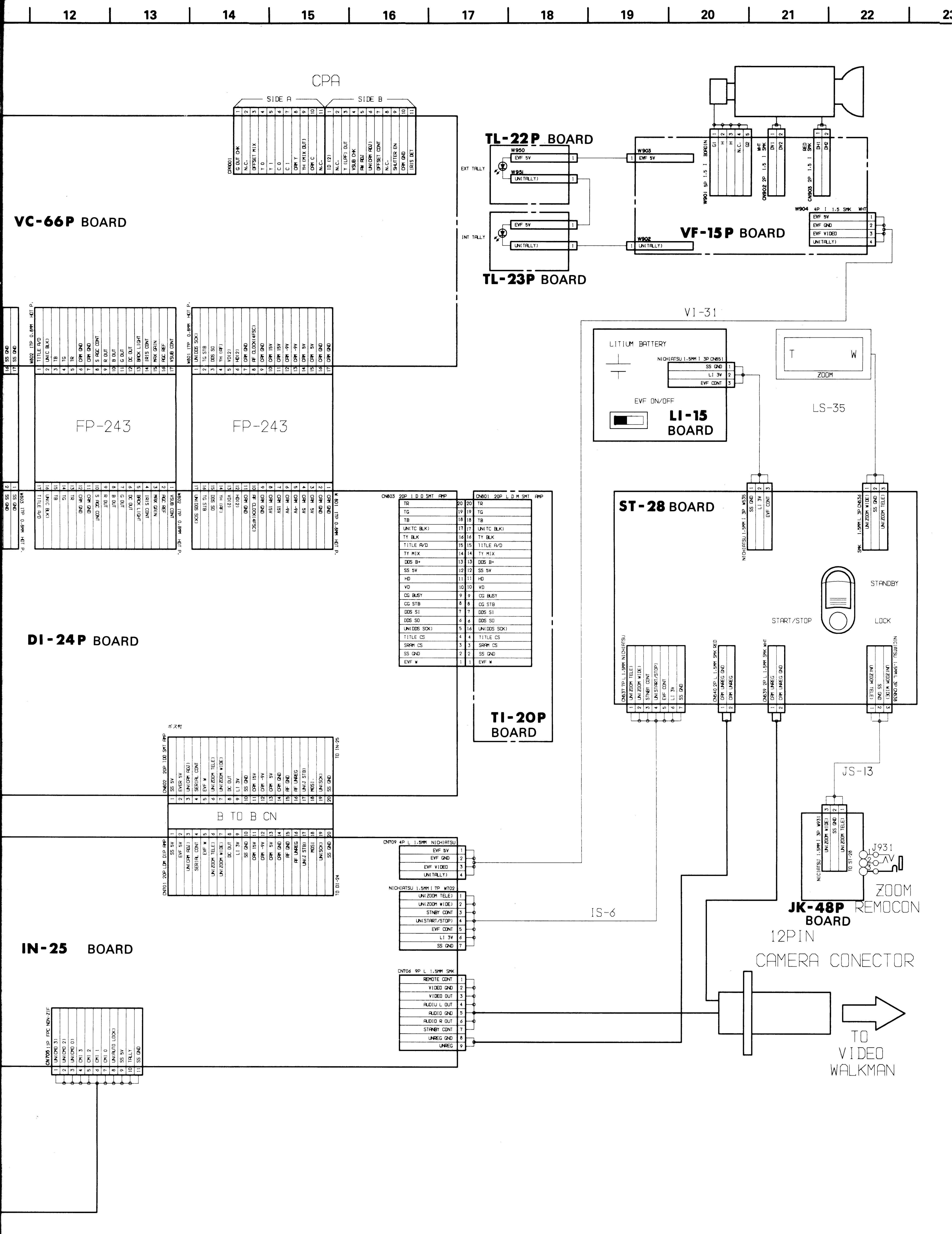
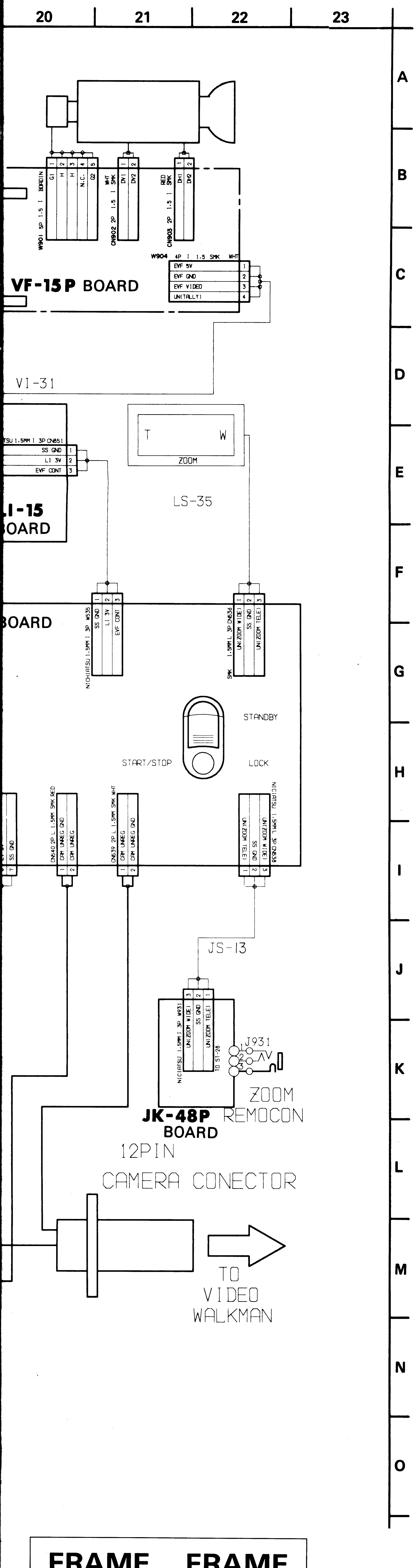
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CD-19P BOARD
CN301 14P L D M SMT AMP
1 H 1
2 PG
3 -9V
4 H 2
5 V SUB
6 CAM GND (N)
7 V 2
8 V 1
9 V 3
10 V 4
11 15V
12 CAM GND (N)
13 CAM GND (N)
14 CCD OUT
CN302 14P I D O SMT AMP
1 H 1
2 PG
3 -9V
4 H 2
5 V SUB
6 CAM GND (N)
7 V 2
8 V 1
9 V 3
10 V 4
11 15V
12 CAM GND (N)
13 CAM GND (N)
14 CCD OUT
VC-66
LD-20 BOARD
CN704 3P I 1.5 SMK
3 UN(FOCUS FAR)
2 UN(FOCUS NEAR)
1 GND
CN705 3P I 1.5 SMK
3 TP
2 WP
1 ZP
CN703 4P I 1.5 SMK
4 FOCUS FD
3 FOCUS ND
2 ZOOM W D
1 ZOOM T D
CN702 8P FPC NON-ZIF
8 DRIVE (+)
7 DRIVE (-)
6 CONT (+)
5 CONT (-)
4 HALL (+)
3 BIAS (-)
2 HALL (+)
1 BIAS (+)
W701 20P HOT.P
1 AF GND
2 AF GND
3 ZP
4 REF 1V
5 REF 2V
6 UN(FOCUS NEAR)
7 UN(FOCUS FAR)
8 UN(ZOOM W)
9 UN(ZOOM T)
10 IRIS CONT
11 HALL OS
12 IRIS ADJ
13 CAM 5V
14 HALL OUT
15 FOCUS REF
16 FOCUS SPEED
17 UN(FOCUS FG)
18 FOCUS N
19 FOCUS F
20 AF UNREG
FP-187
W803 17P 0.8MM HOT.P
1 CAM GND
2 EVF OUT
3 CAM GND
4 VIDEO OUT
5 CAM GND
6 AW ADJ
7 LD
8 EVR 5V
9 EVR 5V
10 UN(CAM ADJ)
11 EVR CLK
12 EVR DI
13 UN(A/D EN)
14 TY CHR
15 SS GND
16 SS GND
17 SS GND
FP-243
W802 17P 0.8MM HOT P.
1 TITLE A/D
2 UN(C BLK)
3 TB
4 TG
INT MIC
MIC +B 1
MIC IN 2
MIC GND 3
CN951 3P I 1.5MM SMK
1 MIC +B
2 MIC IN
3 MIC GND
W801 4P I 1.5MM NICHIATSU
MIC 5V 1
MIC L OUT 2
MIC R OUT 3
MIC GND 4
J951
EXT MIC
(PLUG IN POWER)
J952
EXT MIC DC
MA-38P BOARD
CHASISS GND
CN805 20P I D M SMT AMP
1 AF GND
2 AF GND
3 ZP
4 REF 1V
5 REF 2V
6 UN(FOCUS NEAR)
7 UN(FOCUS FAR)
8 UN(ZOOM W)
9 UN(ZOOM T)
10 IRIS CONT
11 HALL OS
12 IRIS ADJ
13 CAM 5V
14 HALL OUT
15 FOCUS REF
16 FOCUS SPEED
17 UN(FOCUS FG)
18 FOCUS N
19 FOCUS F
20 AF UNREG
(CN701) 20P I D O SMT AMP
DI-2
CN801
1 MIC 5V
2 MIC L IN
3 MIC R IN
4 MIC GND
AG-2 BOARD
CN802
1 MIC 5V
2 AGC L OUT
3 AGC R OUT
4 MIC GND
CN804 14P IDO AMP
1 CAM GND
2 EVF OUT
3 VIDEO OUT
4 CAM GND
5 UN(CMO 3)
6 UN(CMO 2)
7 UN(CMO 0)
8 CMI 3
9 CMI 2
10 CMI 1
11 CMI 0
12 UN(AUTO LOCK)
13 SS GND
14 SS GND
B TO B CN
CN702 14P LDM DIP AMP
1 CAM GND
2 EVF OUT
3 VIDEO OUT
4 CAM GND
5 UN(CMO 3)
6 UN(CMO 2)
7 UN(COM 0)
8 CMI 3
9 CMI 2
10 CMI 1
11 CMI 0
12 UN(AUTO LOCK)
13 SS GND
14 SS GND
BACK LIGHT
FOCUS
WHT BAL
SHUTTER
TITLE ON/OFF
FK-13 BOARD
W881 11P 1.0MM
11 UN(CMO 3)
10 UN(CMO 2)
9 UN(CMO 0)
8 CMI 3
7 CMI 2
6 CMI 1
7 CMI 0
4 UN(AUTO LOCK)
3 SS 5V
2 TALLY
1 SS GND
TO IN-25 HOT P.
AUTO LOCK
W882 8P 1.0MM
CHASISS GND 8
UN(CMO 2) 7
UN(CMO 0) 6
CMI 1 5
CMI 0 4
SS 5V 3
TALLY 2
SS GND 1
FK-17 BOARD
W891 8P 1.0MM
1 CASISS GND
2 UN(CMO 2)
3 UN(CMO 0)
4 CMI 1
5 CMI 0
6 SS 5V
7 TALLY
8 SS GND
COLOR
MEMORY
DATE
TIME
MI-27
CN708 4P L 1.5MM NICHIATSU
1 MIC 5V
2 MIC L OUT
3 MIC R OUT
4 MIC GND
IN-25
CN703 4P L 1.5MM SMK
1 UN(J STB)
2 MOSI
3 UN(SCK)
4 SS GND
CN704 4P L 1.5MM SMK RED
1 UN(CAM ADJ)
2 DC OUT
3 SERIAL CONT
4 SS GND
W701 11P I 1.5MM SMK
1 AF UNREG
2 AF GND
3 EVF 5V
4 EVF GND
5 CAM 15V
6 CAM -9V
7 CAM 5V
8 CAM GND
9 UNREG
10 UNREG GND
11 CAM ON
CN705 11P FPC NON-ZIF
1 UN(CMO 3)
2 UN(CMO 2)
DC/DC CONVERTOR
CN 1 3P L 1.5 SMK WHT
CAM UNREG 1
UNREG GND 2
CAM ON 3
CN 2 4P L 1.5 SMK WHT
CAM 15V (VO11) 1
CAM -9V (VO12) 2
CAM 5V (VO13) 3
CAM GND 4
WHT SMK 1.5 L 5P CN 3
N.C. 1
AF UNREG 2
AF GND 3
EVF 5V (VO23) 4
EVF GND 5
ID-15
FP-244


12
13
14
15
16
17
18
19
20
21
22
CPA
SIDE A
SIDE B
VC-66P BOARD
TL-22P BOARD
TL-23P BOARD
EXT TALLY
INT TALLY
W950
W951
EVF 5V
UN(TALLY)
W903
W902
VF-15P BOARD
CN901 5P 1.5 I BOADIN
CN902 2P 1.5 I
CN903 2P 1.5 I
W904 4P I 1.5 SMK WHT
EVF 5V
EVF GND
EVF VIDEO
UN(TALLY)
VI-31
LITIUM BATTERY
NICHIATSU 1.5MM I 3P CN651
SS GND
LI 3V
EVF CONT
EVF ON/OFF
LI-15 BOARD
T
W
ZOOM
LS-35
FP-243
FP-243
W602 17P 0.8MM HOT P.
W601 17P 0.8MM HOT P.
W603 17P 0.8MM HOT P.
DI-24P BOARD
CN803 20P I D D SMT AMP
CN801 20P L D M SMT AMP
TR
TG
TB
UN(TC BLK)
TY BLK
TITLE A/D
TY MIX
DDS B+
SS 5V
HD
VD
CG BUSY
CG STB
DDS SI
DDS SO
UN(DDS SCK)
TITLE CS
SRAM CS
SS GND
EVF W
TI-20P BOARD
ST-28 BOARD
NICHIATSU 1.5MM I 3P W535
SMK 1.5MM L 3P CN536
UN(ZOOM TELE)
UN(ZOOM WIDE)
STANDBY
START/STOP
LOCK
CN537 7P L 1.5MM NICHIATSU
CN540 2P L 1.5MM SMK RED
CN539 2P L 1.5MM SMK WHT
CPM UNREG GND
CPM UNREG
NICHIATSU 1.5MM L 3P CN538
JS-13
CN602 20P I DD SMT AMP
TO IN-25
B TO B CN
CN701 20P LDM DIP AMP
TO DI-24
CN709 4P L 1.5MM NICHIATSU
NICHIATSU 1.5MM I 7P W702
UN(ZOOM TELE)
UN(ZOOM WIDE)
STNBY CONT
UN(START/STOP)
EVF CONT
LI 3V
SS GND
IS-6
CN706 9P L 1.5MM SMK
REMOTE CONT
VIDEO GND
VIDEO OUT
AUDIO L OUT
AUDIO GND
AUDIO R OUT
STANBY CONT
UNREG GND
UNREG
IN-25 BOARD
CN705 11P FPC NON-ZIF
UN(CMD 3)
UN(CMD 2)
UN(CMD 0)
CM1 3
CM1 2
CM1 1
CM1 0
UN(AUTO LOCK)
SS 5V
TALLY
SS GND
NICHIATSU 1.5MM I 3P W931
TO ST-28
J931
JK-48P BOARD
ZOOM REMOCON
12PIN CAMERA CONECTOR
TO VIDEO WALKMAN

FRAME FRAME


20
21
22
23
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
W901 5P 1.5 I BOARDIN
G1
H
H
N.C.
G2
CN902 2P 1.5 I WHT SMK
DV1
DV2
CN903 2P 1.5 I RED SMK
DH1
DH2
W904 4P I 1.5 SMK WHT
EVF 5V
EVF GND
EVF VIDEO
UN(TALLY)
VF-15P BOARD
VI-31
TSU 1.5MM I 3P CN851
SS GND
LI 3V
EVF CONT
LI-15 BOARD
T
W
ZOOM
LS-35
BOARD
NICHIATSU 1.5MM I 3P W535
SS GND
LI 3V
EVF CONT
SMK 1.5MM L 3P CN536
UN(ZOOM WIDE)
SS GND
UN(ZOOM TELE)
STANDBY
START/STOP
LOCK
SS GND
CN540 2P L 1.5MM SMK RED
CAM UNREG GND
CAM UNREG
CN539 2P L 1.5MM SMK WHT
CAM UNREG
CAM UNREG GND
NICIATSU 1.5MML 3P CN538
UN(ZOOM TELE)
SS GND
UN(ZOOM WIDE)
JS-13
NICIATSU 1.5MM I 3P W931
UN(ZOOM WIDE)
SS GND
UN(ZOOM TELE)
TO ST-28
J931
ZOOM REMOCON
JK-48P BOARD
12PIN CAMERA CONECTOR
TO VIDEO WALKMAN

## 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**
**(In addition to this , the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ░ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.*

  } The inner two layers' patterns are not indicated.
- Circled numbers refer to waveforms.*
- (B) or (F), etc. of capacitors indicate the temperature characteristics.

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the pattern face are indicated. |

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ⏦ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- ━━ : B+ Line.*
- ‒ ‒ ‒ : B– Line*.
- ⇨ : IN/OUT direction of (+, – ) B LINE.*
- Circled numbers refer to waveforms.*

**Note:** The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

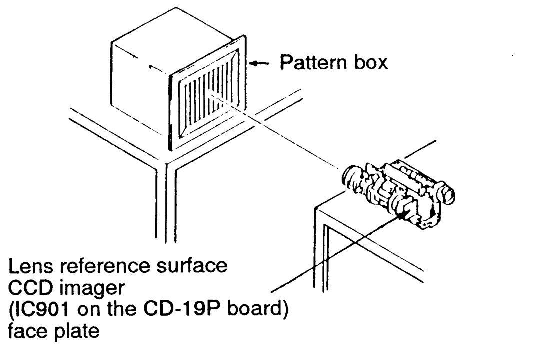
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**

**(CAMERA, DIGITAL TITLE block)**

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Lens reference surface
CCD imager
(IC901 on the CD-19P board)
face plate

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

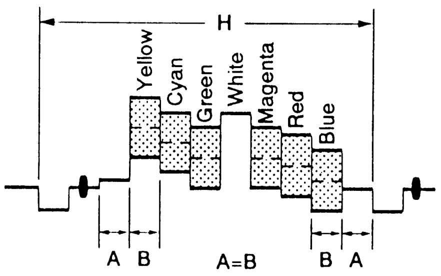

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

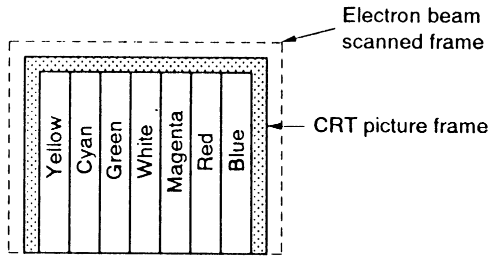

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

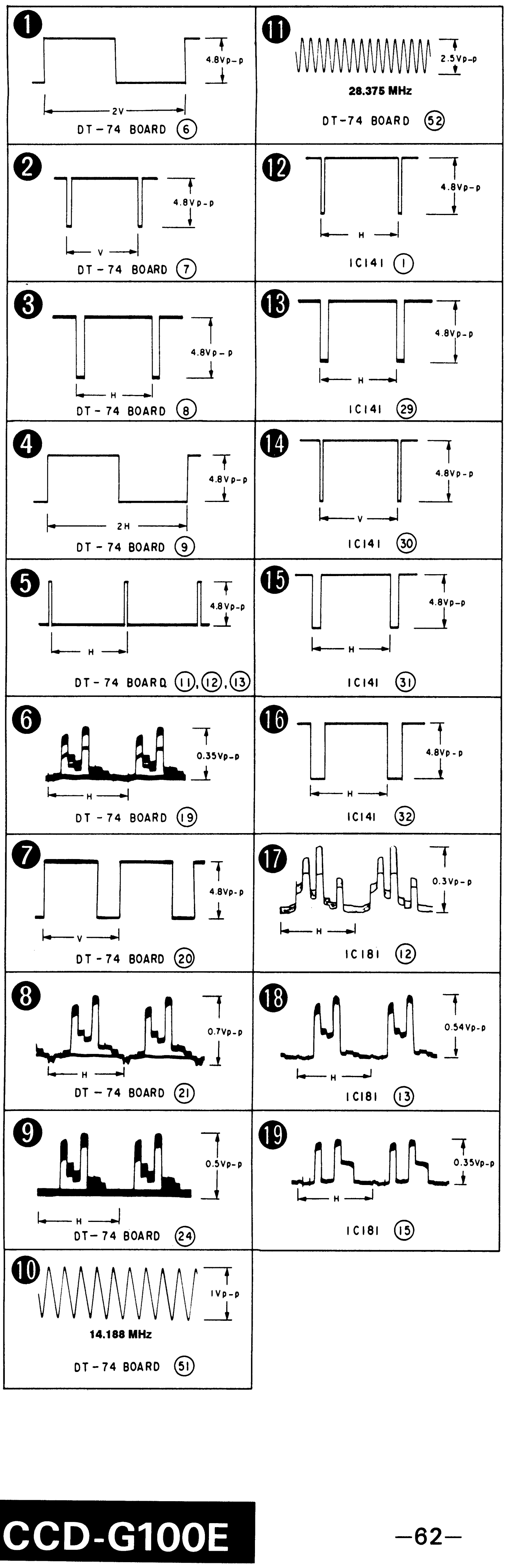
- *: indicated by the color red.

## VC-66P (CAMERA PROCESS), CD-19P (CCD IMAGER), LD-20 (IRIS/FOCUS/ZOOM MOTOR DRIVE) PRINTED WIRING BOARDS

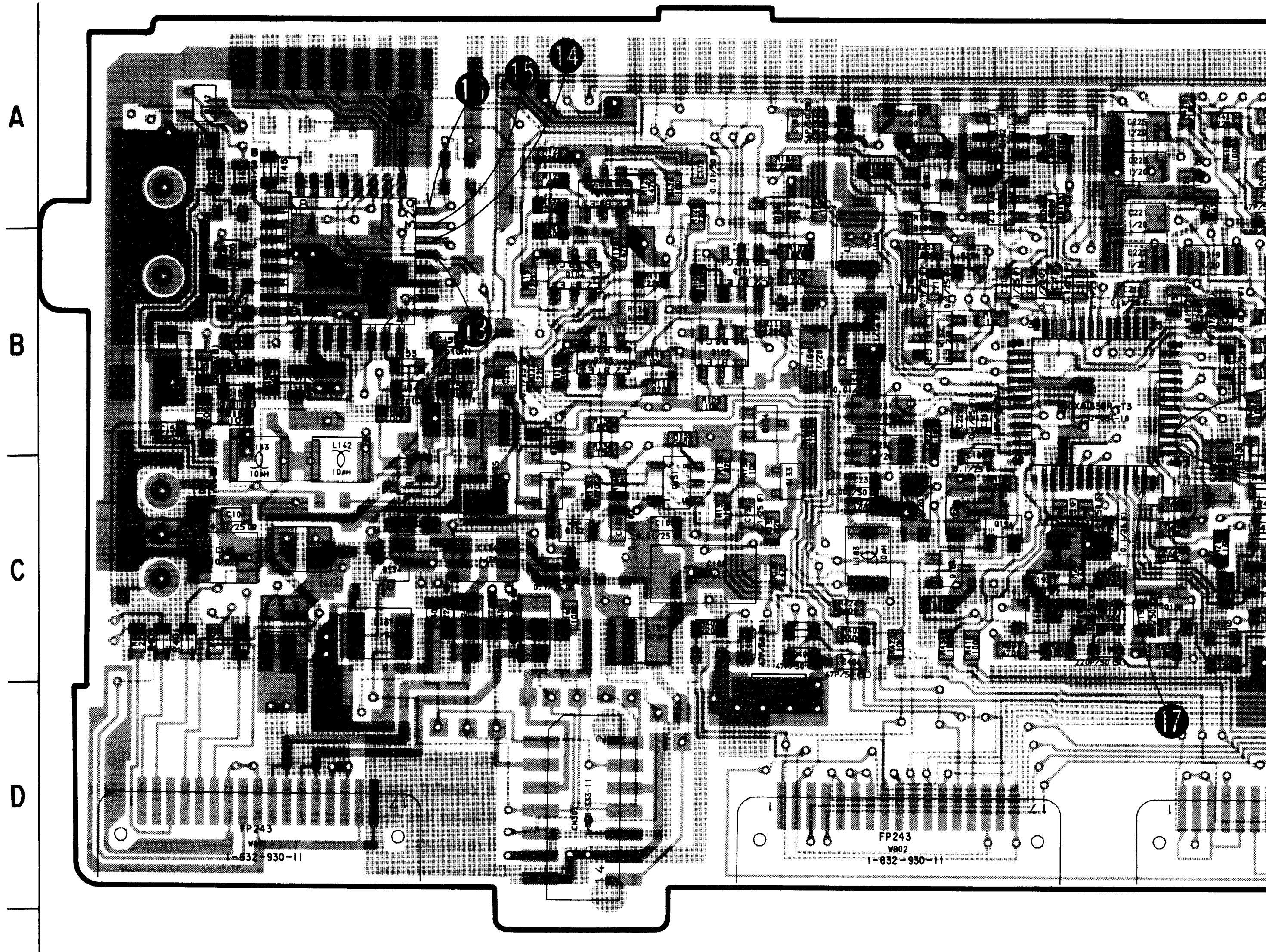
– Ref. No.: VC-66P, CD-19P, LD-20P Boards; 1,000 series –

- VC-66P board has four layers structure but inner two layers' patterns are omitted.

**VC-66P** BOARD (TG/SH, SG, MX)

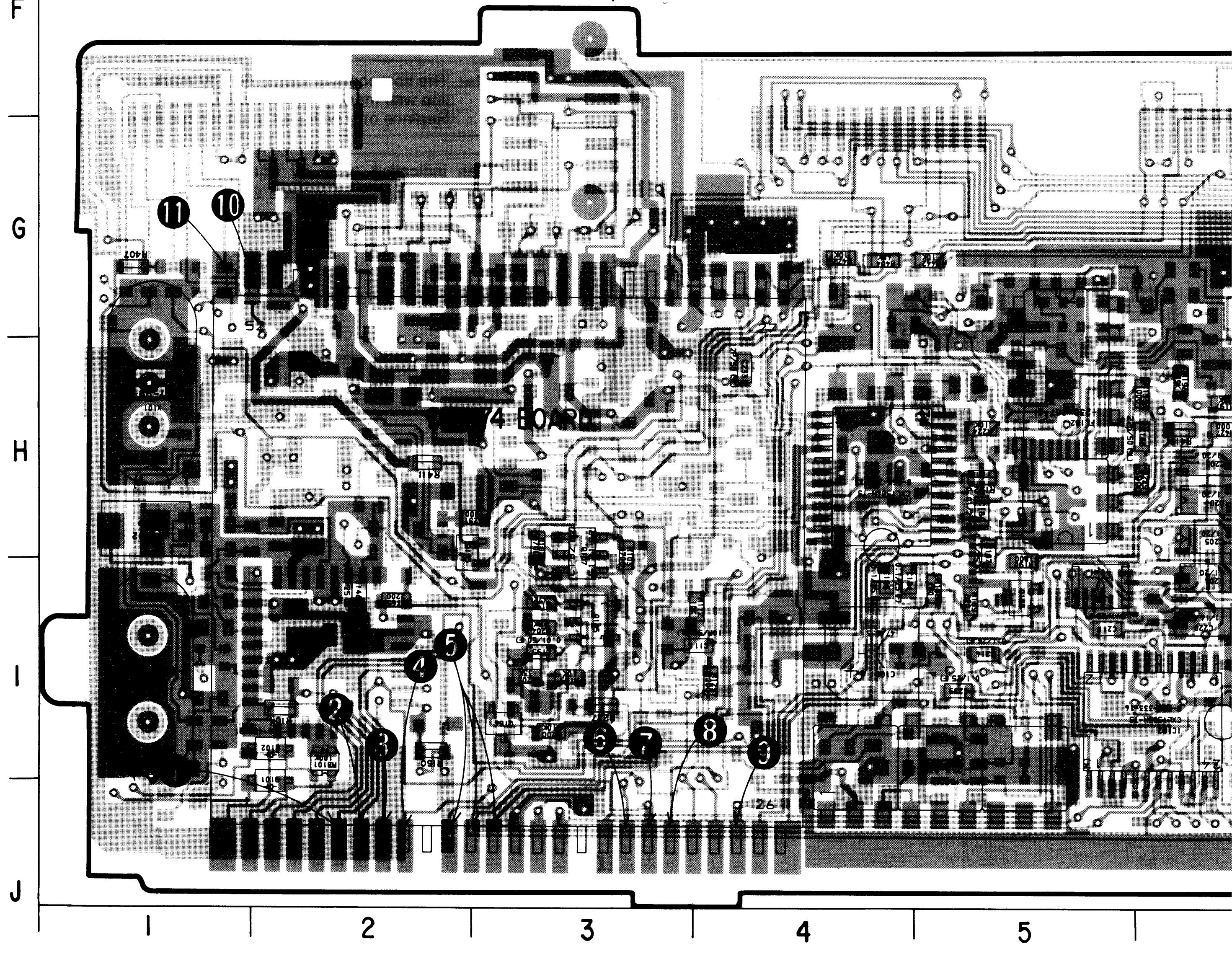


**VC-66P** BOARD (CONDUCTOR SIDE)

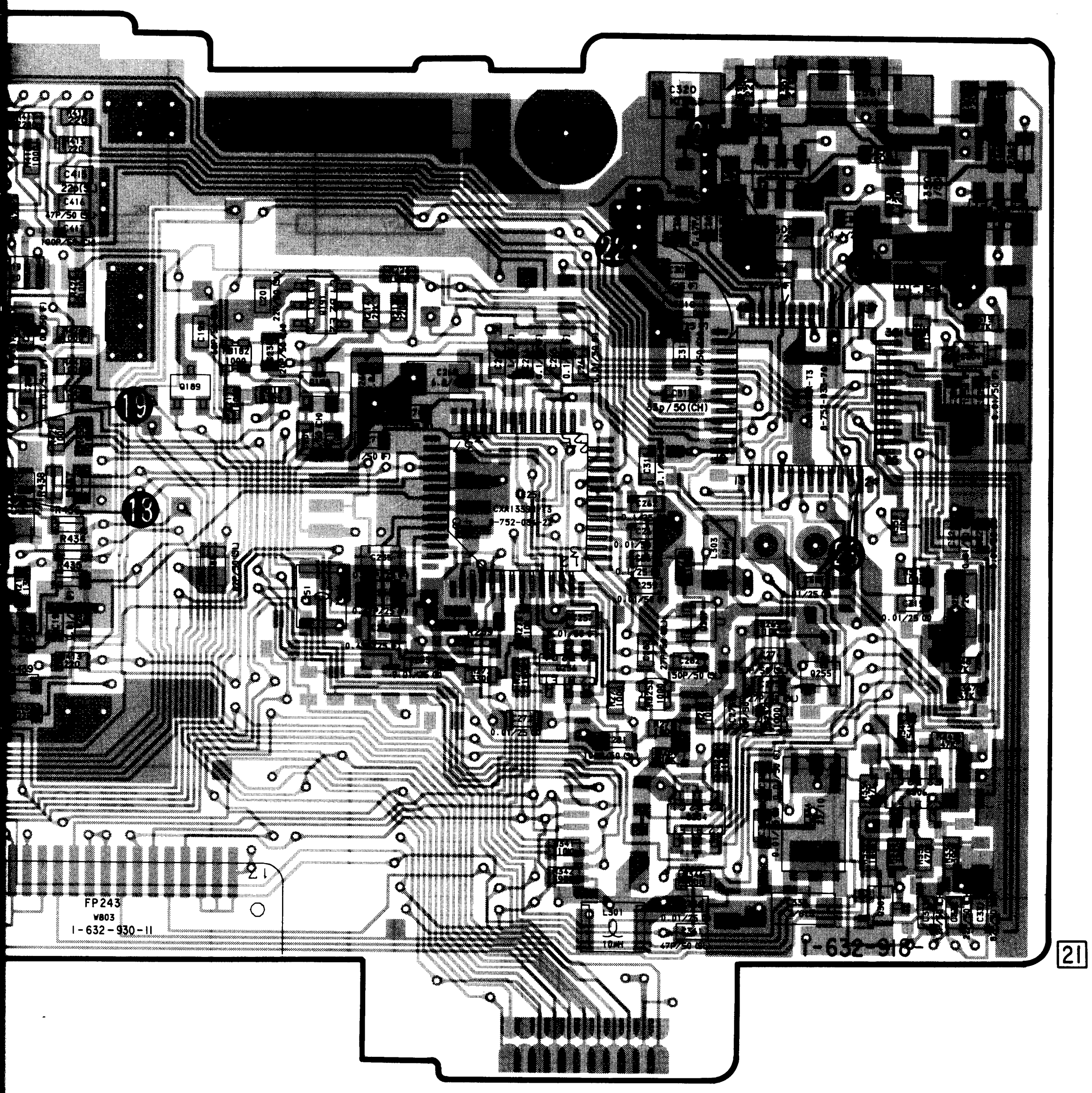


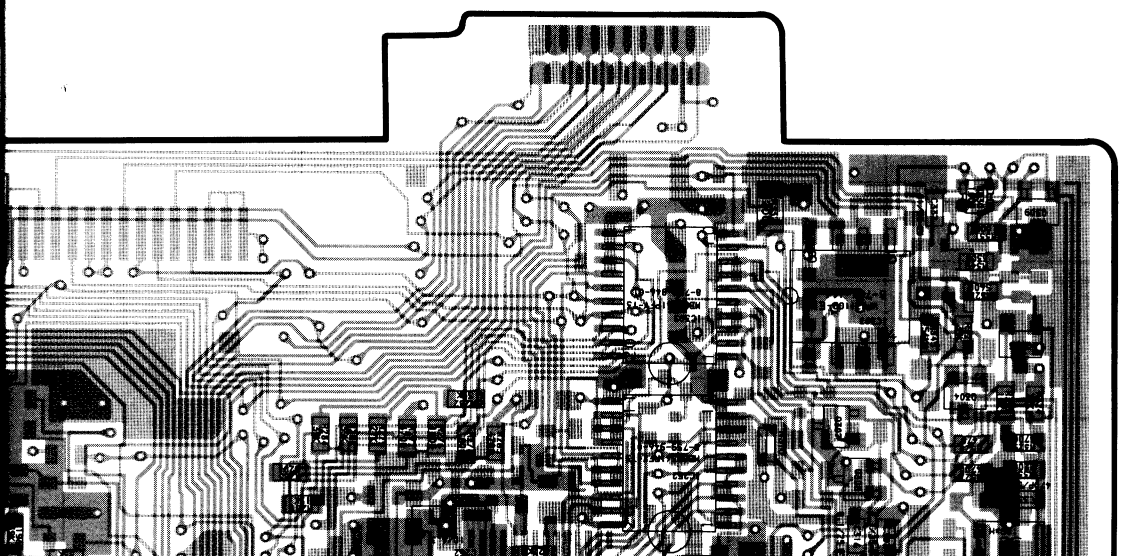
A
B
C
D
⓭
⓮
⓯
⓱
FP243
1-632-930-11

**VC-66P** BOARD (COMPONENT SIDE)



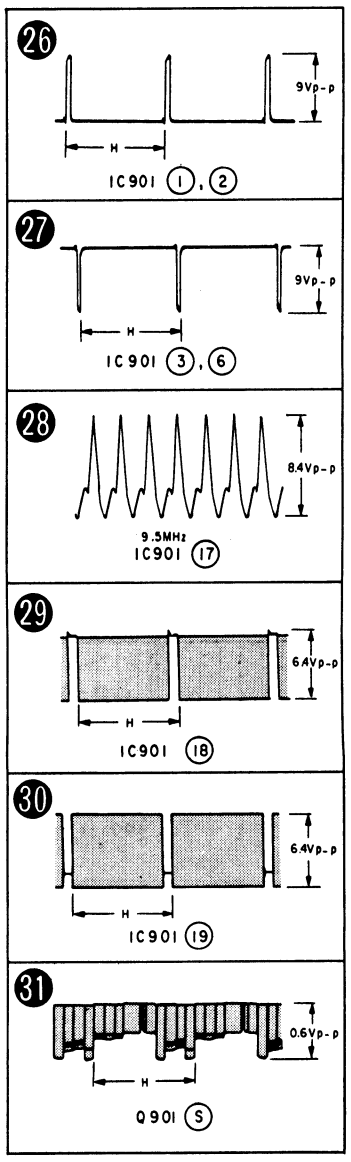
E
F
G
H
I
J
❷
❸
❹
❺
❻
❼
❽
❾
❿
⓫
1
2
3
4
5


19
13
21
FP243
V803
1-632-930-11
1-632-918-
21

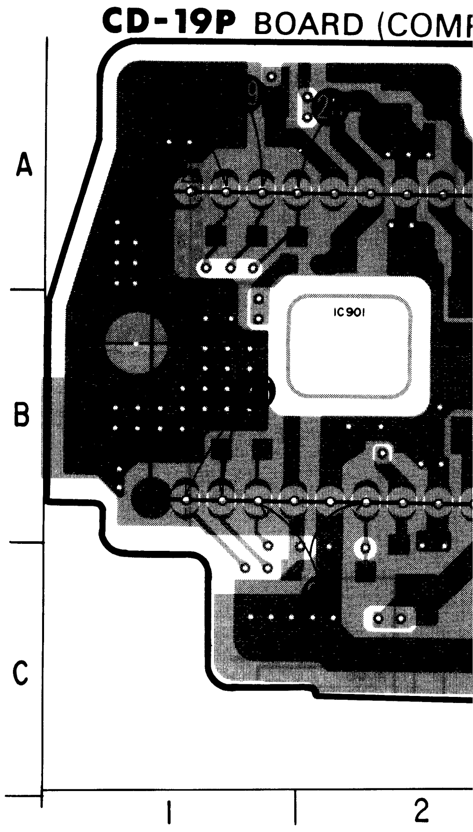

20
21
1-632-918-
21
6
7
8
9
10

A(1)

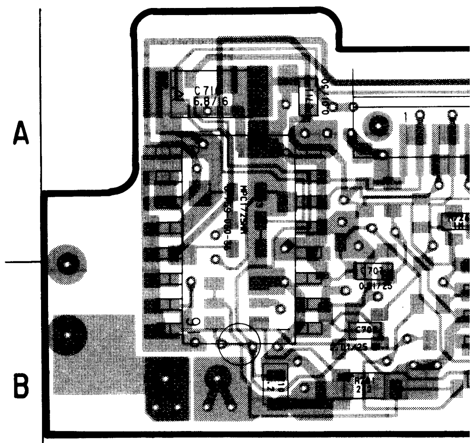
**CD-19P** BOARD



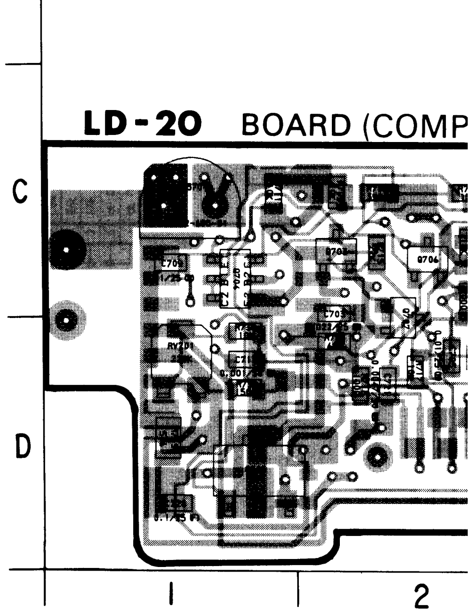
**CD-19P** BOARD (COMP


A
B
C
IC901
1
2

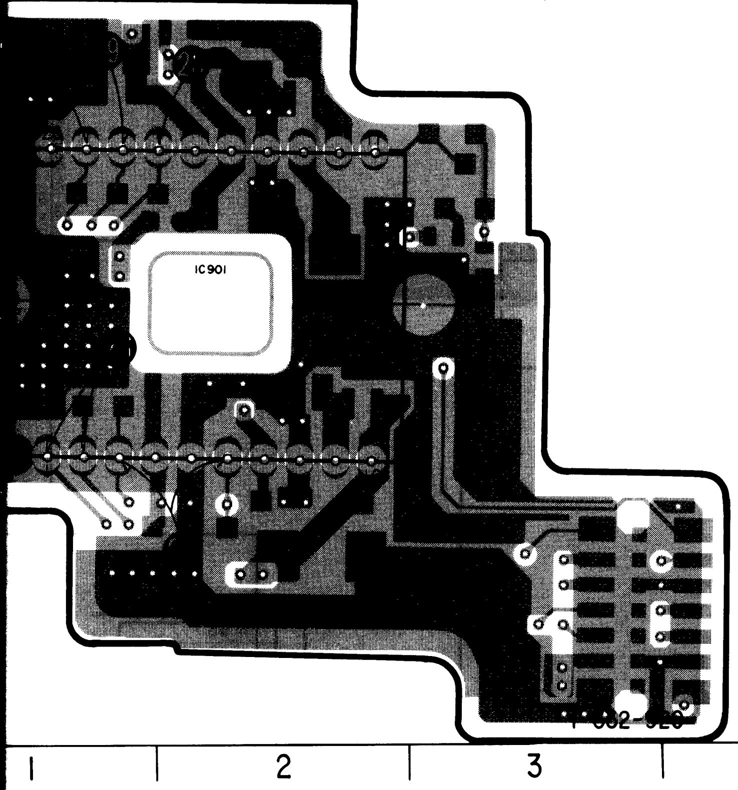
**LD-20** BOARD (CO



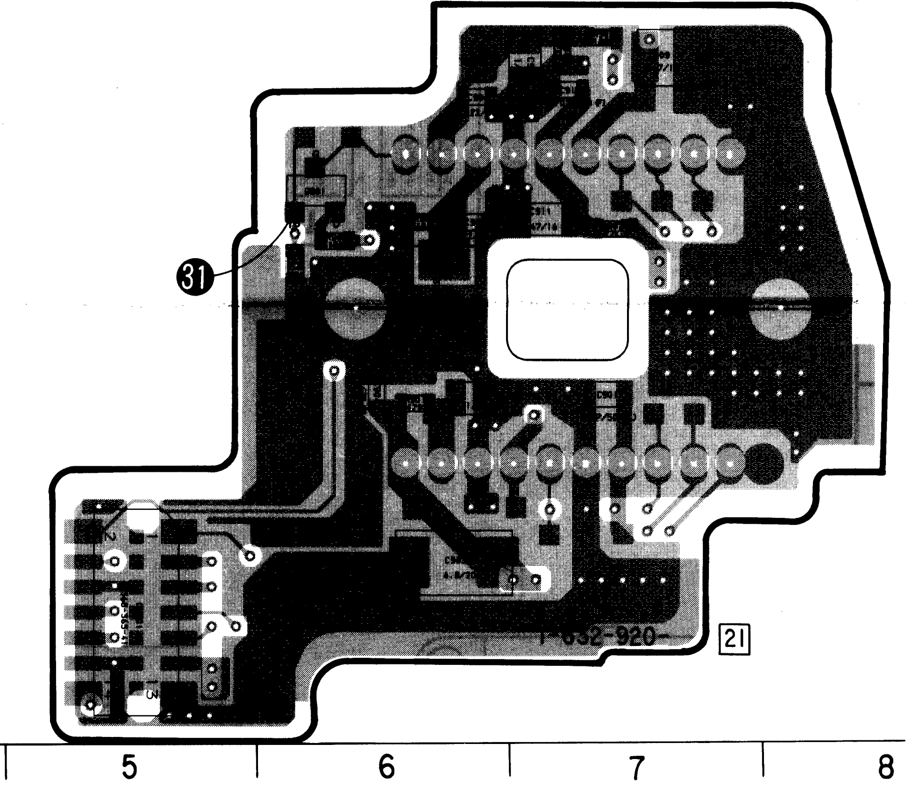
**LD-20** BOARD (COMP



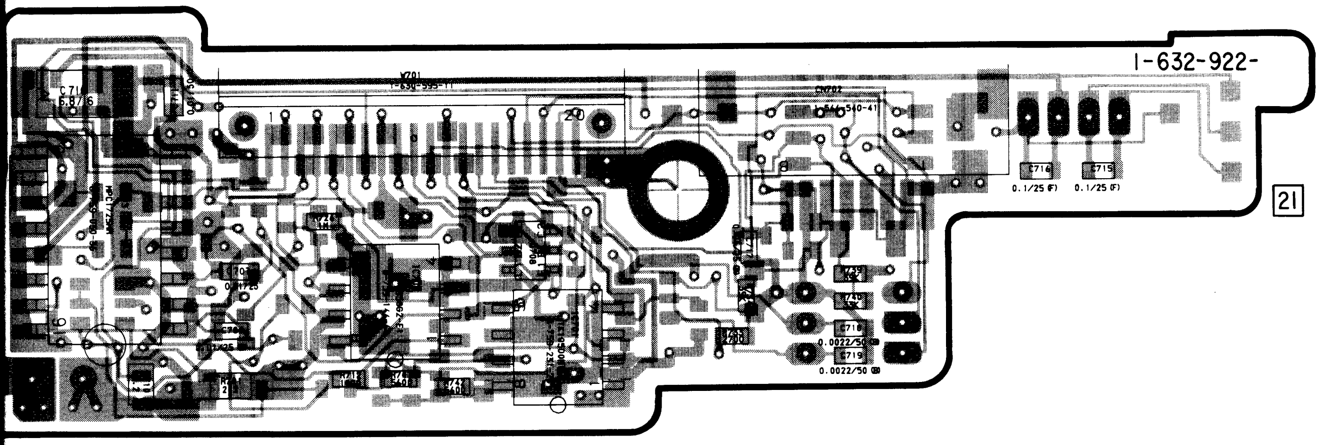
## -19P BOARD (COMPONENT SIDE)


IC901
1-632-920
21
1
2
3
4

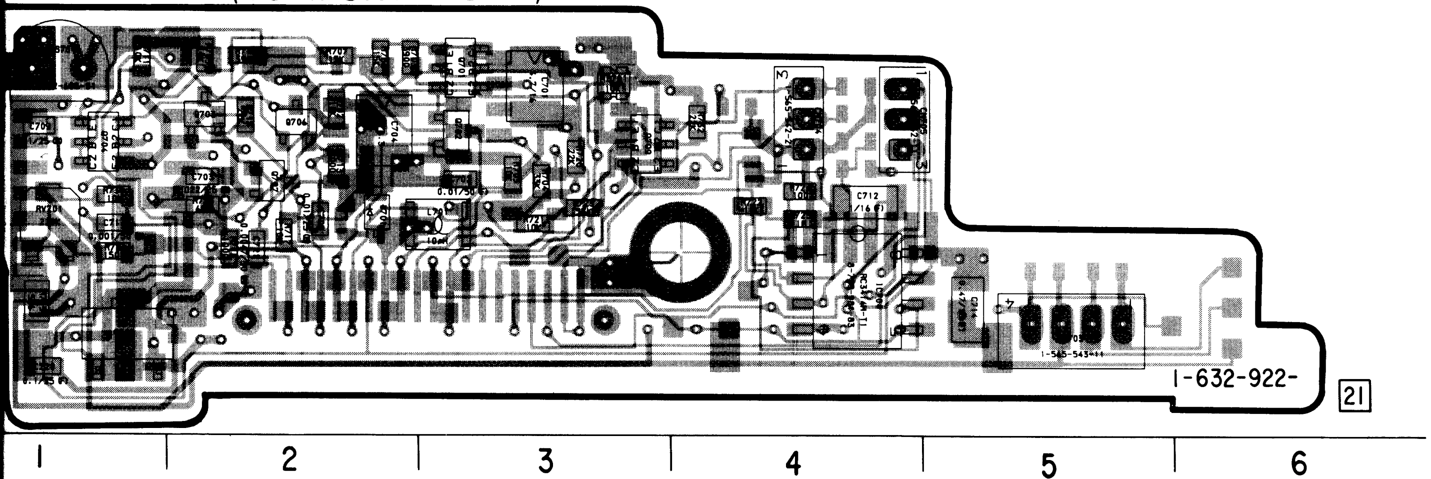
## CD-19P BOARD (CONDUCTOR SIDE)


31
1-632-920-
21
5
6
7
8

## LD-20 BOARD (CONDUCTOR SIDE)


1-632-922-
21
C716 0.1/25 (F)
C715 0.1/25 (F)
C718 0.0022/50
C719 0.0022/50

## -20 BOARD (COMPONENT SIDE)

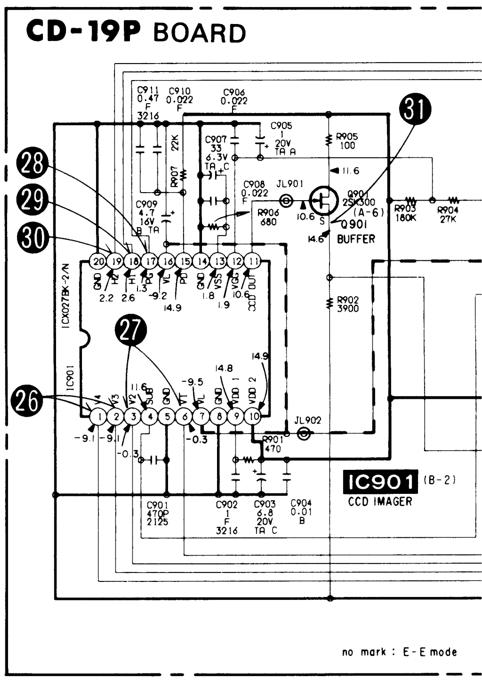

C712
1-632-922-
21
1
2
3
4
5
6

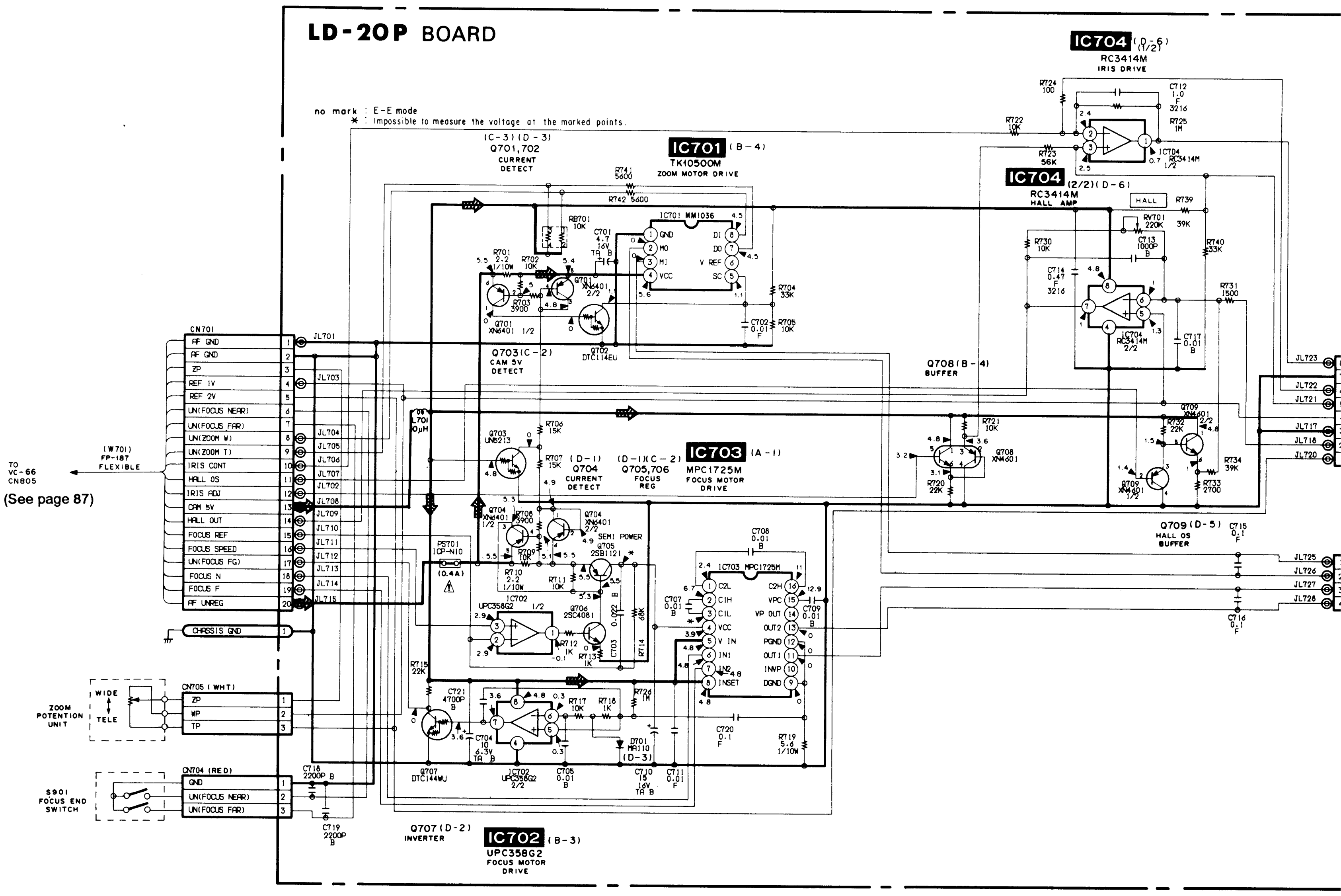
# VC-66P (CAMERA PROCESS), CD-19P (CCD IMAGER), LD-20 (IRIS/FOCUS/ZOOM MOTOR DRIVE) SCHEMATIC DIAGRAM

– Ref. No.: VC-66P, CD-19P, LD-20P Boards; 1,000 series –

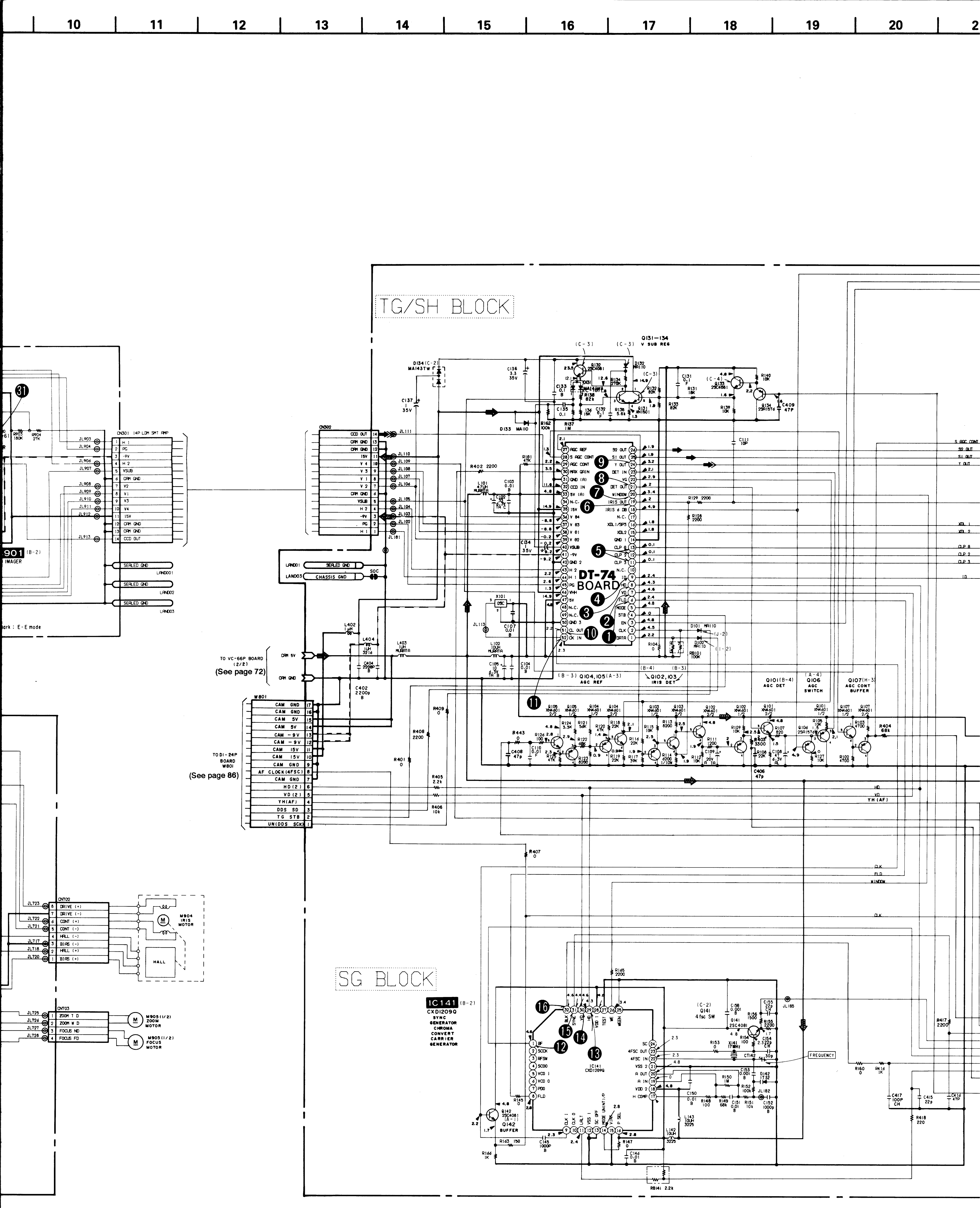
## CAUTIONS FOR REPLACING THE CCD IMAGER

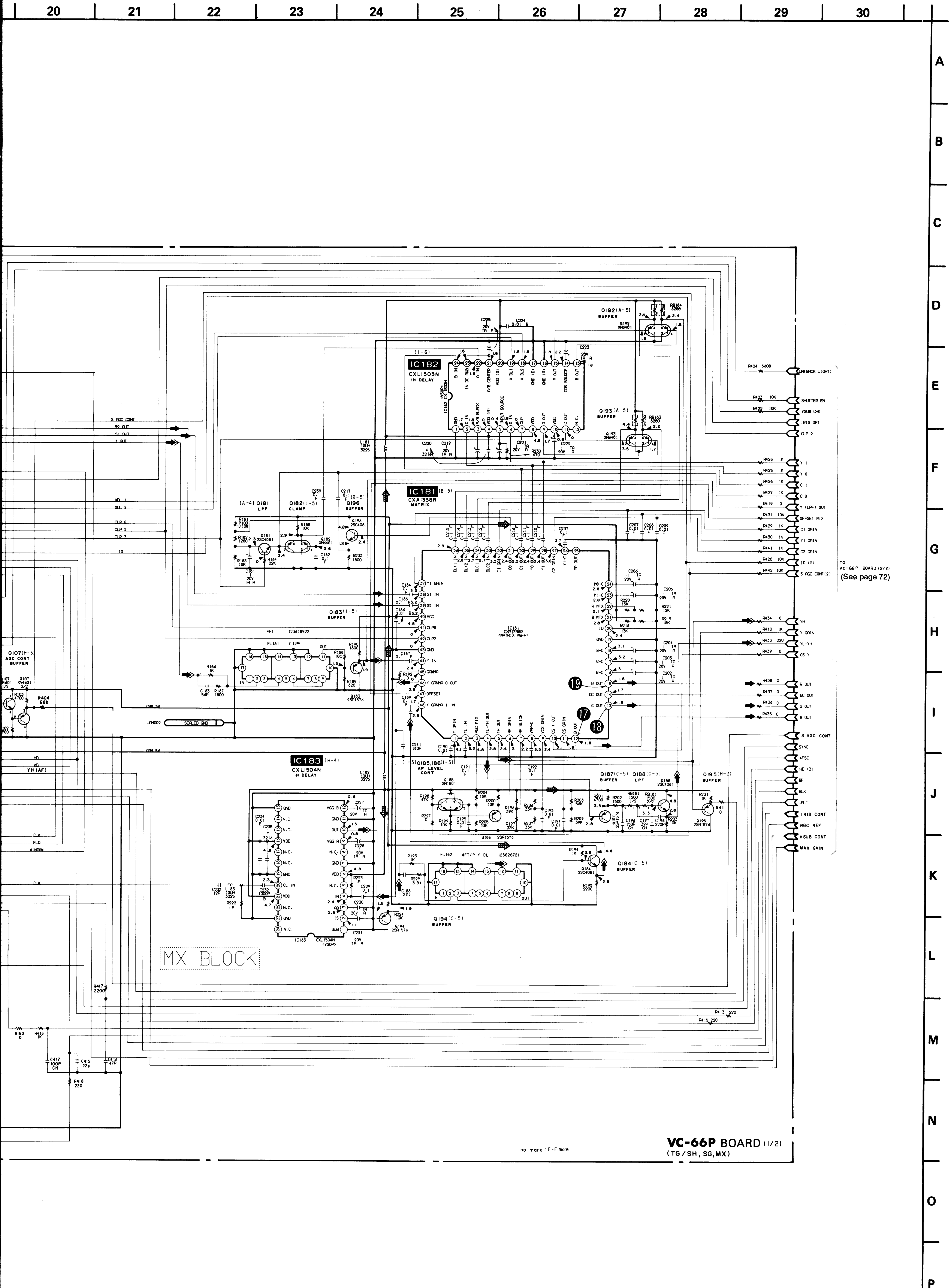
- According to type of CCD imager (IC901 on the CD-19P board), it is necessary to require the compensating ROM (IC003 on the DT-74D board).
  The repairing CCD imager does not require the compensating ROM.
  So when replacing the CCD imager on which the compensating ROM is installed, remove the compensating ROM before replacement.
- Since the mounted CD-19P and DT-74D borads which are supplied as repair parts are not installed IC901 and IC003 respectively, replace the respective ICs from the previous board to the new when replacing each board.
- When you replaced the CCD imager, perform the overall camera head adjustment.
- CCD imager has such a structure that it may be spoiled by static electricity, so handle it with a care similar for MOS IC. Further, be sure that the light receiving part has no stick of dust and no entry of bright light.


CD-19P BOARD
IC901 (B-2) CCD IMAGER
Q901 BUFFER
JL901
JL902
no mark : E-E mode


LD-20P BOARD
no mark : E-E mode
* : Impossible to measure the voltage at the marked points.
IC701 (B-4) TK10500M ZOOM MOTOR DRIVE
IC702 (B-3) UPC358G2 FOCUS MOTOR DRIVE
IC703 (A-1) MPC1725M FOCUS MOTOR DRIVE
IC704 (D-6) (1/2) RC3414M IRIS DRIVE
IC704 (2/2) (D-6) RC3414M HALL AMP
Q701,702 CURRENT DETECT
Q703 (C-2) CAM 5V DETECT
Q704 CURRENT DETECT
Q705,706 FOCUS REG
Q707 (D-2) INVERTER
Q708 (B-4) BUFFER
Q709 (D-5) HALL OS BUFFER
CN701
RF GND
RF GND
ZP
REF 1V
REF 2V
UN(FOCUS NEAR)
UN(FOCUS FAR)
UN(ZOOM W)
UN(ZOOM T)
IRIS CONT
HALL OS
IRIS ADJ
CAM 5V
HALL OUT
FOCUS REF
FOCUS SPEED
UN(FOCUS FG)
FOCUS N
FOCUS F
RF UNREG
CHASSIS GND
TO VC-66 CN805
(W701) FP-187 FLEXIBLE
(See page 87)
CN705 (WHT)
ZP
MP
TP
ZOOM POTENTION UNIT
WIDE
TELE
CN704 (RED)
GND
UN(FOCUS NEAR)
UN(FOCUS FAR)
S901 FOCUS END SWITCH
PS701

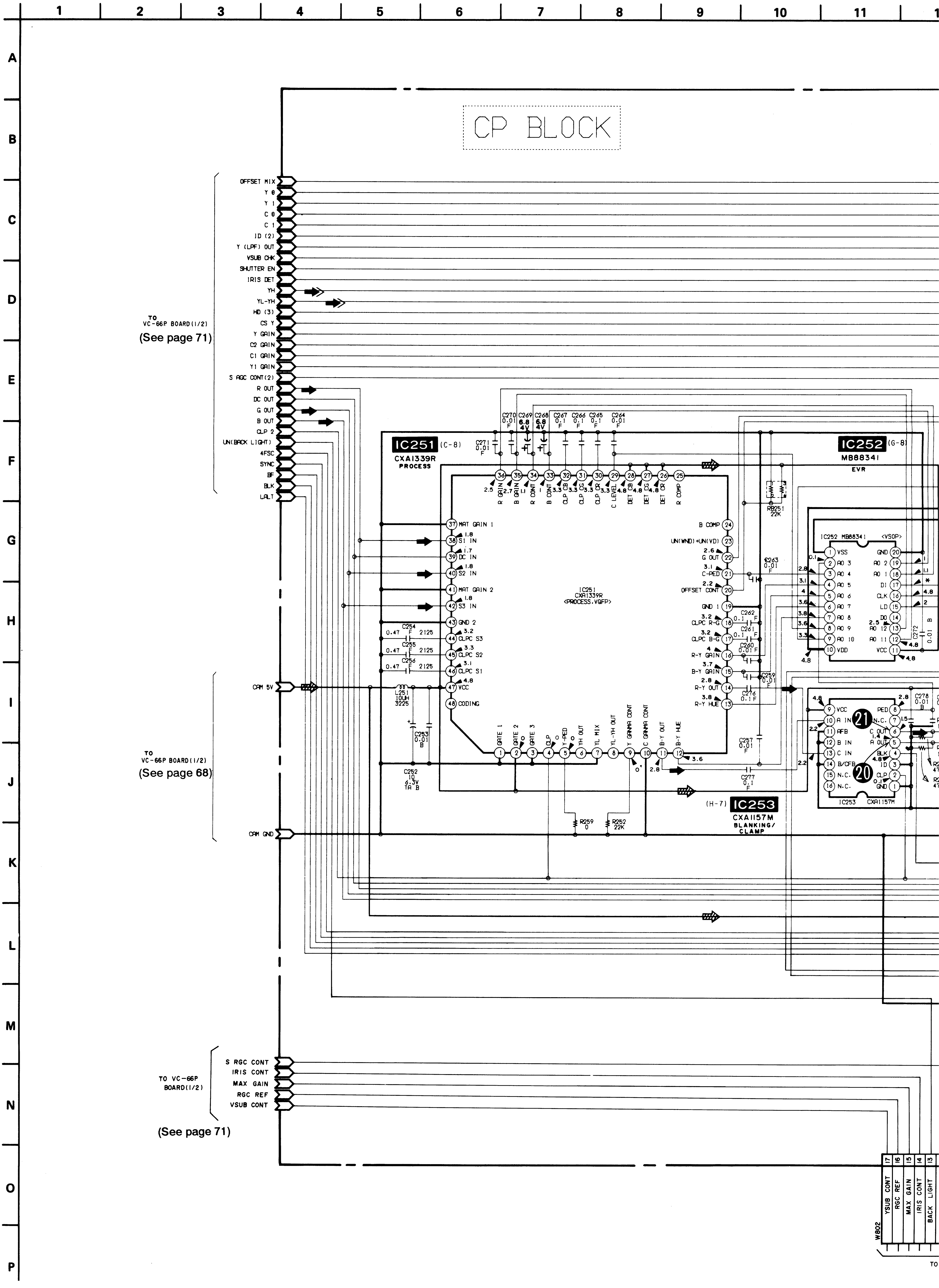
➡ : REC CHROMA Signal
⇨ : REC Y Signal
⇛ : REC Y/CHROMA Signal

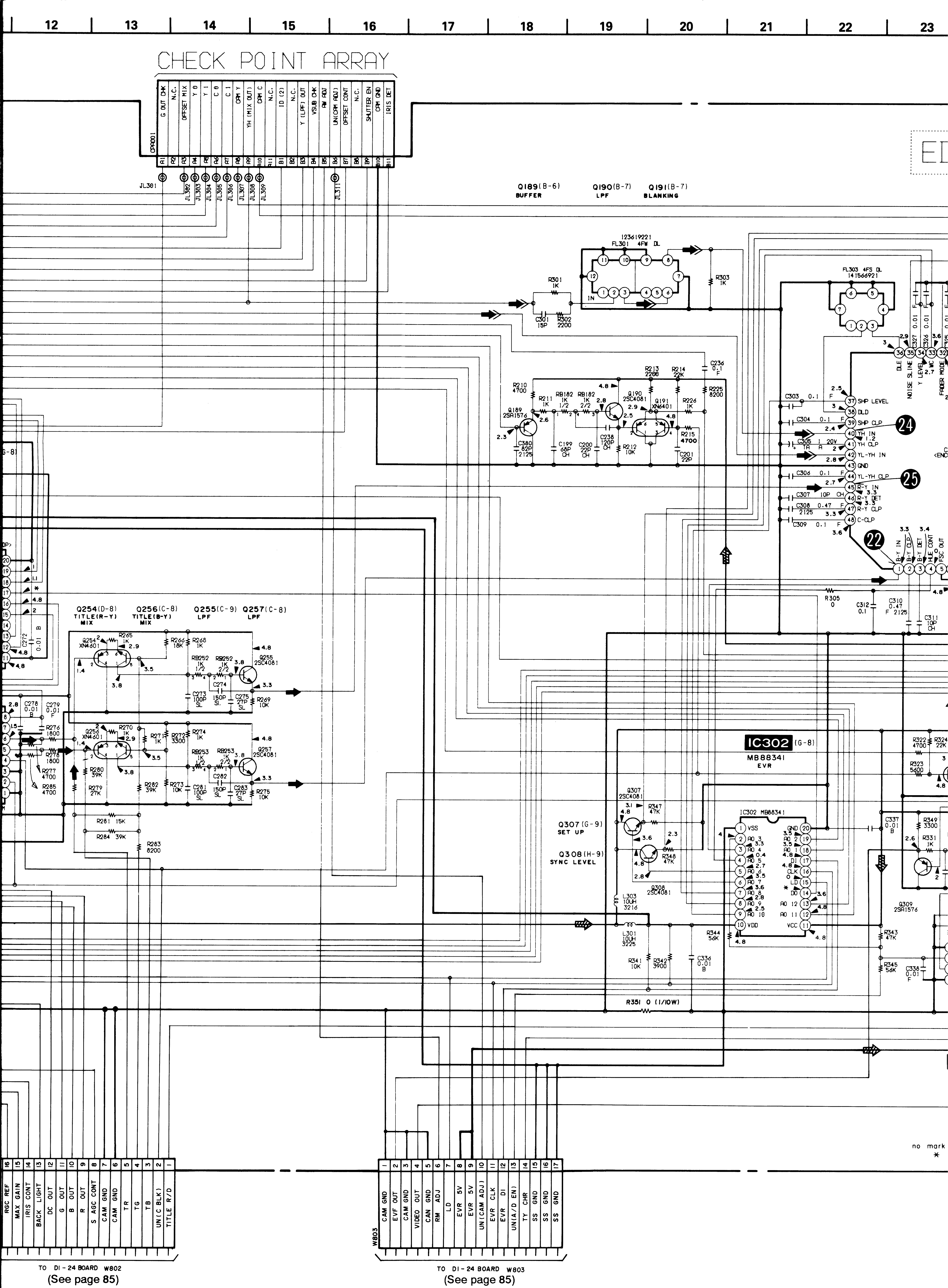

10
11
12
13
14
15
16
17
18
19
20
TG/SH BLOCK
SG BLOCK
DT-74 BOARD
IC141 (B-2)
CXD1209Q
SYNC GENERATOR CHROMA CONVERT CARRIER GENERATOR
CN301 14P LDM SMT AMP
CN302
CN702
CN703
W801
TO VC-66P BOARD (2/2)
(See page 72)
TO DI-24P BOARD W801
(See page 86)
CAM 5V
CAM GND
CAM GND
CAM 5V
CAM -9V
CAM 15V
AF CLOCK(4FSC)
HD(2)
VD(2)
YH(AF)
DDS SD
TG STB
UNI(DDS SCK)
SEALED GND
CHASSIS GND
LAND001
LAND002
LAND003
LAND01
LAND03
IMAGER
Mark : E-E mode
M904 IRIS MOTOR
HALL
M905(1/2) ZOOM MOTOR
M905(1/2) FOCUS MOTOR
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
HALL (-)
BIAS (-)
HALL (+)
BIAS (+)
ZOOM T D
ZOOM W D
FOCUS ND
FOCUS FD
Q131-134 V SUB REG
D134 (C-2) MA143TW
D133 MA110
X101 OSC
Q104,105 (A-3) AGC REF
Q102,103 (B-3) IRIS DET
Q101 (B-4) AGC DET
Q106 (A-4) AGC SWITCH
Q107 (H-3) AGC CONT BUFFER
Q141 (C-2) 4fsc SW
Q142 (A-1) BUFFER
FREQUENCY
RB141 2.2k
CLK
FLD
WINDOW
HD
VD
YH (AF)

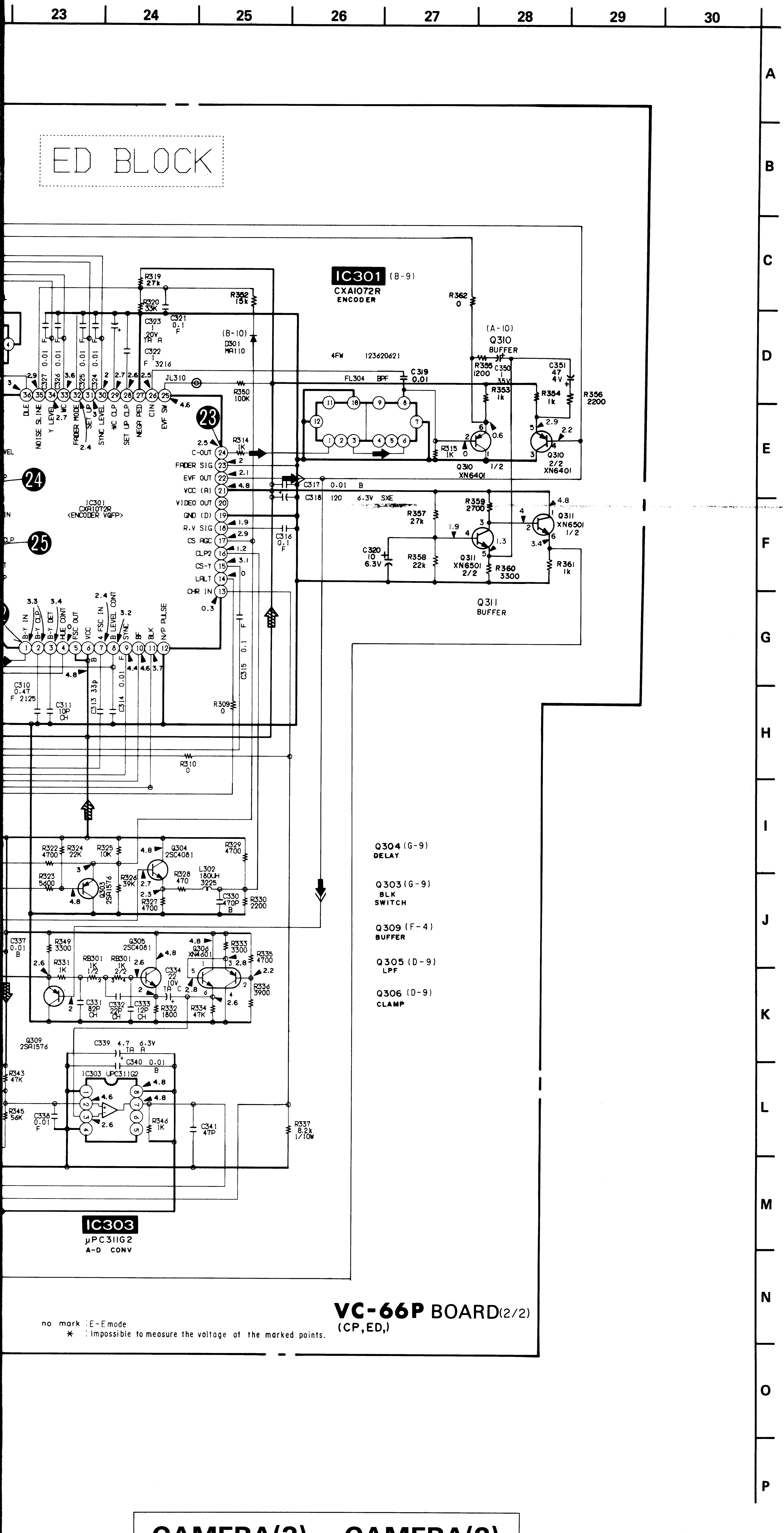

20
21
22
23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
IC182 CXL1503N 1H DELAY
IC181 CXA1338R MATRIX
IC183 CXL1504N 1H DELAY
Q181 LPF
Q182 CLAMP
Q196 BUFFER
Q183 BUFFER
Q192 BUFFER
Q193 BUFFER
Q185,186 AP LEVEL CONT
Q187 BUFFER
Q188 LPF
Q195 BUFFER
Q184 BUFFER
Q194 BUFFER
FL181 Y LPF
FL182 4FT/P Y DL
MX BLOCK
TO VC-66P BOARD (2/2)
(See page 72)
UNIBACK LIGHT
SHUTTER EN
VSUB CHK
IRIS DET
CLP 2
Y 1
Y 8
C 1
C 8
Y (LPF) OUT
OFFSET MIX
C1 GAIN
Y1 GAIN
C2 GAIN
ID (2)
S AGC CONT(2)
YH
Y GAIN
YL-YH
CS Y
R OUT
DC OUT
G OUT
B OUT
S AGC CONT
SYNC
4FSC
HD (3)
BF
BLK
LALT
IRIS CONT
RGC REF
VSUB CONT
MAX GAIN
S AGC CONT
S2 OUT
S1 OUT
Y OUT
XDL 1
XDL 2
CLP 8
CLP 2
CLP 3
ID
SEALED GND
YH (AF)
Q107 AGC CONT BUFFER
⑰
⑱
⑲

no mark : E-E mode

**VC-66P** BOARD (1/2)
(TG/SH, SG,MX)


CP BLOCK
OFFSET MIX
Y 0
Y 1
C 0
C 1
ID (2)
Y (LPF) OUT
VSUB CHK
SHUTTER EN
IRIS DET
YH
YL-YH
HD (3)
CS Y
Y GAIN
C2 GAIN
C1 GAIN
Y1 GAIN
S AGC CONT(2)
R OUT
DC OUT
G OUT
B OUT
CLP 2
UN(BACK LIGHT)
4FSC
SYNC
BF
BLK
LALT
TO VC-66P BOARD(1/2)
(See page 71)
CAM 5V
CAM GND
TO VC-66P BOARD(1/2)
(See page 68)
S AGC CONT
IRIS CONT
MAX GAIN
AGC REF
VSUB CONT
TO VC-66P BOARD(1/2)
(See page 71)
IC251 (C-8)
CXA1339R
PROCESS
IC251
CXA1339R
<PROCESS.VQFP>
MAT GAIN 1
S1 IN
DC IN
S2 IN
MAT GAIN 2
S3 IN
GND 2
CLPC S3
CLPC S2
CLPC S1
VCC
CODING
GATE 1
GATE 2
GATE 3
CLP
Y-PED
YH OUT
YL MIX
YL-YH OUT
Y GAMMA CONT
C GAMMA CONT
B-Y OUT
B-Y HUE
R-Y HUE
R-Y OUT
B-Y GAIN
R-Y GAIN
CLPC B-G
CLPC R-G
GND 1
OFFSET CONT
C-PED
G OUT
UN(WND)+UN(VD)
B COMP
R COMP
DET CR
DET CG
DET CB
C LEVEL
CLP CR
CLP CG
CLP CB
B CONT
R CONT
B GAIN
R GAIN
IC252 (G-8)
MB88341
EVR
IC252 MB88341 <VSOP>
VSS
AO 3
AO 4
AO 5
AO 6
AO 7
AO 8
AO 9
AO 10
VDD
GND
AO 2
AO 1
DI
CLK
LD
DO
AO 12
AO 11
VCC
IC253 (H-7)
CXA1157M
BLANKING/CLAMP
IC253 CXA1157M
VCC
A IN
AFB
B IN
C IN
B/CFB
N.C.
PED
C OUT
A OUT
BLK
ID
CLP
GND
㉑
⑳
C270 0.01 F
C269 6.8 4V
C268 6.8 4V
C267 0.1 F
C266 0.1 F
C265 0.1 F
C264 0.01 F
C271 0.01 F
RB251 22K
C263 0.01 F
C262 0.1 F
C261 0.1 F
C260 0.01 F
C259 0.01 F
C276 0.1 F
C257 0.01 F
C277 0.1 F
C272 0.01 B
C278 0.01 B
C254 0.47 F 2125
C255 0.47 F 2125
C256 0.47 F 2125
L251 10UH 3225
C253 0.01 B
C252 10 6.3V TA B
R259 0
R252 22K
W802
YSUB CONT
RGC REF
MAX GAIN
IRIS CONT
BACK LIGHT
17
16
15
14
13
TO


12
13
14
15
16
17
18
19
20
21
22
23
CHECK POINT ARRAY
CPA001
G OUT CHK
N.C.
OFFSET MIX
Y 0
Y 1
C 0
C 1
CAM Y
YH (MIX OUT)
CAM C
N.C.
ID (2)
N.C.
Y (LPF) OUT
VSUB CHK
AW ADJ
UN(CAM ADJ)
OFFSET CONT
N.C.
SHUTTER EN
CAM GND
IRIS DET
JL301
JL302
JL303
JL304
JL305
JL306
JL307
JL308
JL309
JL311
Q189(B-6) BUFFER
Q190(B-7) LPF
Q191(B-7) BLANKING
FL301 4FM DL 123619221
FL303 4FS DL 141566921
Q254(D-8) TITLE(R-Y) MIX
Q256(C-8) TITLE(B-Y) MIX
Q255(C-9) LPF
Q257(C-8) LPF
IC302 (G-8) MB88341 EVR
Q307 (G-9) SET UP
Q308 (H-9) SYNC LEVEL
R351 0 (1/10W)
SHP LEVEL
DLD
SHP CLP
YH IN
YH CLP
YL-YH IN
GND
YL-YH CLP
R-Y IN
R-Y DET
R-Y CLP
C-CLP
B-Y IN
B-Y CLP
B-Y DET
HUE CONT
FSC OUT
DLE
NOISE SLINE
Y LEVEL
FADER MODE
24
25
22
no mark
*
RGC REF
MAX GAIN
IRIS CONT
BACK LIGHT
DC OUT
G OUT
B OUT
R OUT
S AGC CONT
CAM GND
CAM GND
TR
TG
TB
UN(C BLK)
TITLE R/D
TO DI-24 BOARD W802
(See page 85)
W803
CAM GND
EVF OUT
CAM GND
VIDEO OUT
CAN GND
RM ADJ
LD
EVR 5V
EVR 5V
UN(CAM ADJ)
EVR CLK
EVR DI
UN(A/D EN)
TY CHR
SS GND
SS GND
SS GND
TO DI-24 BOARD W803
(See page 85)


23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
ED BLOCK
IC301 (B-9)
CXA1072R
ENCODER
IC301
CXA1072R
<ENCODER VQFP>
Q310 (A-10)
BUFFER
Q310 1/2 XN6401
Q310 2/2 XN6401
Q311 XN6501 1/2
Q311 XN6501 2/2
Q311 BUFFER
FL304 BPF
D301 MA110
JL310
C-OUT
FADER SIG
EVF OUT
VCC (A)
VIDEO OUT
GND (D)
R-Y SIG
CS AGC
CLP2
CS-Y
LALT
CHR IN
B-Y IN
B-Y CLP
B-Y DET
HUE CONT
FSC OUT
VCC
FSC IN
B LEVEL CONT
SYNC
BF
BLK
N/P PULSE
NOISE SLINE
Y LEVEL
FADER MODE
SYNC LEVEL
SET UP CLP
NEGA PED
CIN
EVF SW
㉓
㉔
㉕
Q304 2SC4081
Q303 2SA1576
Q305 2SC4081
Q306 XN4601
Q309 2SA1576
L302 180UH
IC303 UPC311G2
Q304 (G-9) DELAY
Q303 (G-9) BLK SWITCH
Q309 (F-4) BUFFER
Q305 (D-9) LPF
Q306 (D-9) CLAMP
IC303
μPC311G2
A-D CONV

**VC-66P** BOARD(2/2)
(CP,ED,)

no mark : E-Emode
* : Impossible to measure the voltage at the marked points.

➡ : REC CHROMA Signal
⇨ : REC Y Signal
⇨⇨ : REC Y/CHROMA Signal

**CAMERA(2) CAMERA(2)**

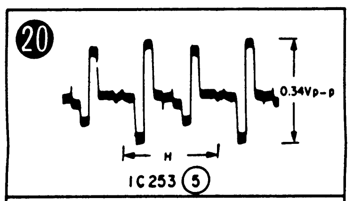
## VC-66P (CAMERA PROCESS) PRINTED WIRING BOARD

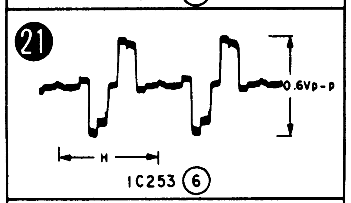
– Ref. No.: VC-66P Board; 1,000 series –

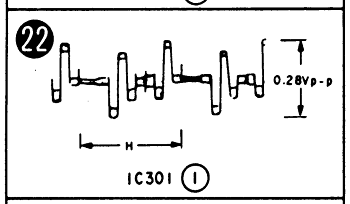
- VC-66P board has four layers structure but inner two layers' patterns are omitted.

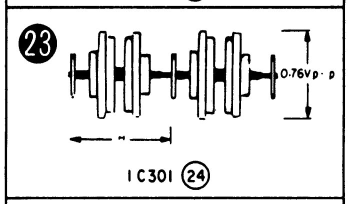
**Caution:**
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

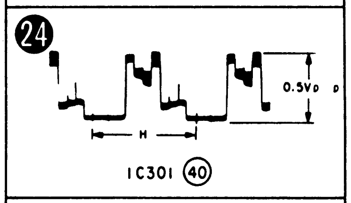
**VC-66P** BOARD (CP, ED, EVR)

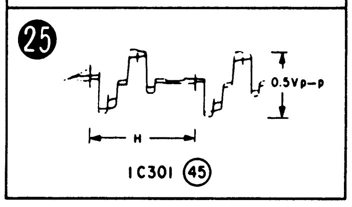




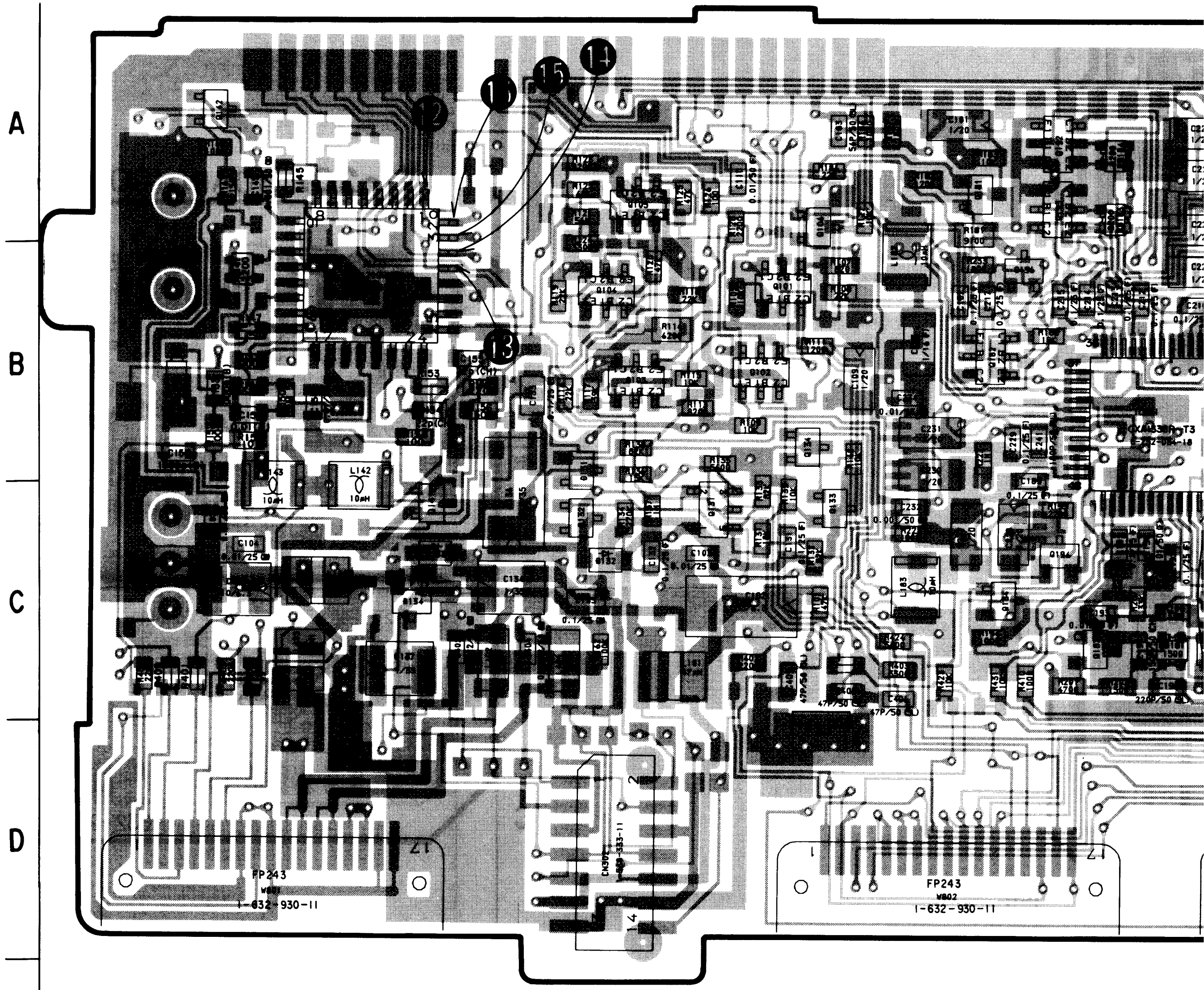




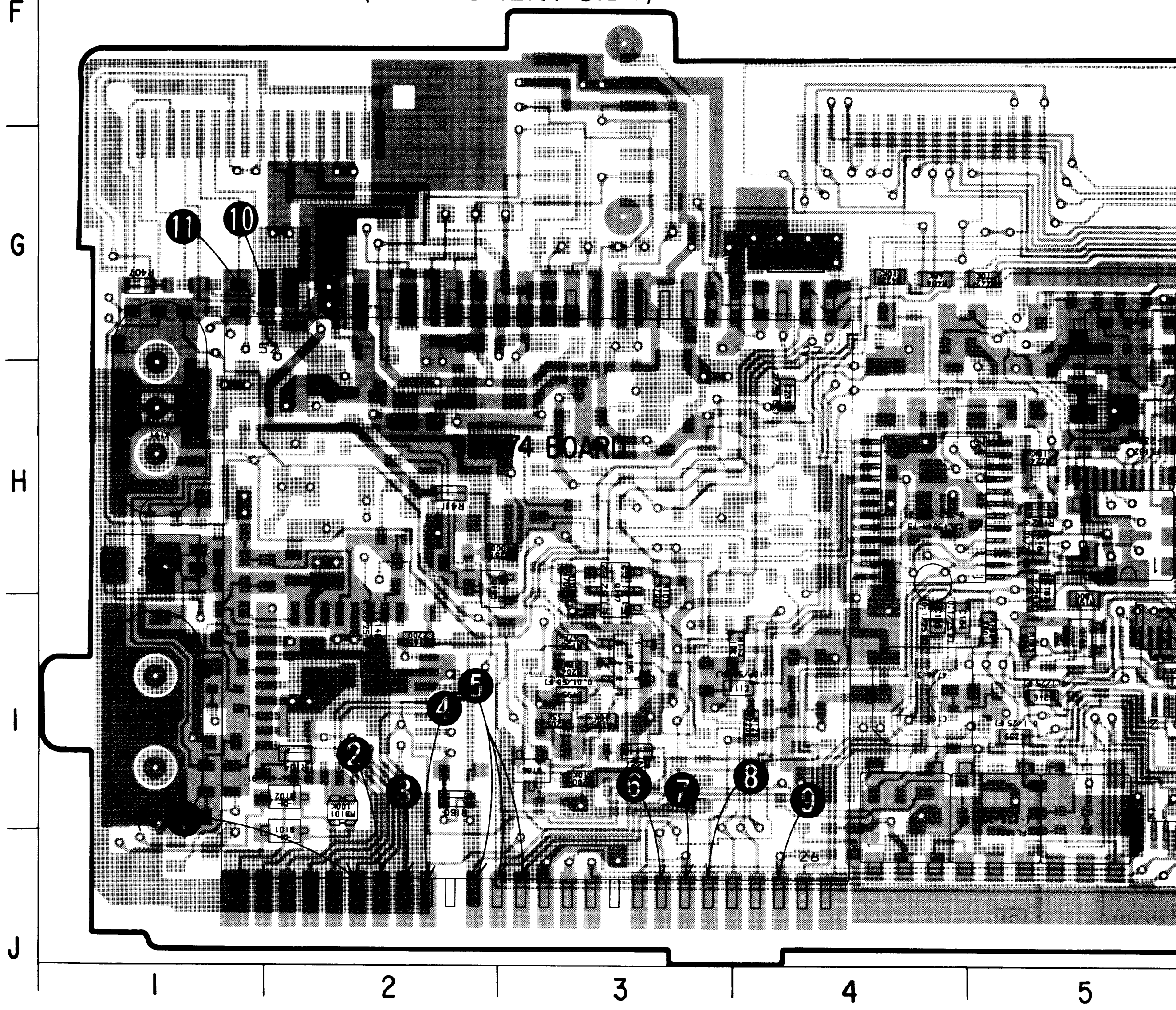


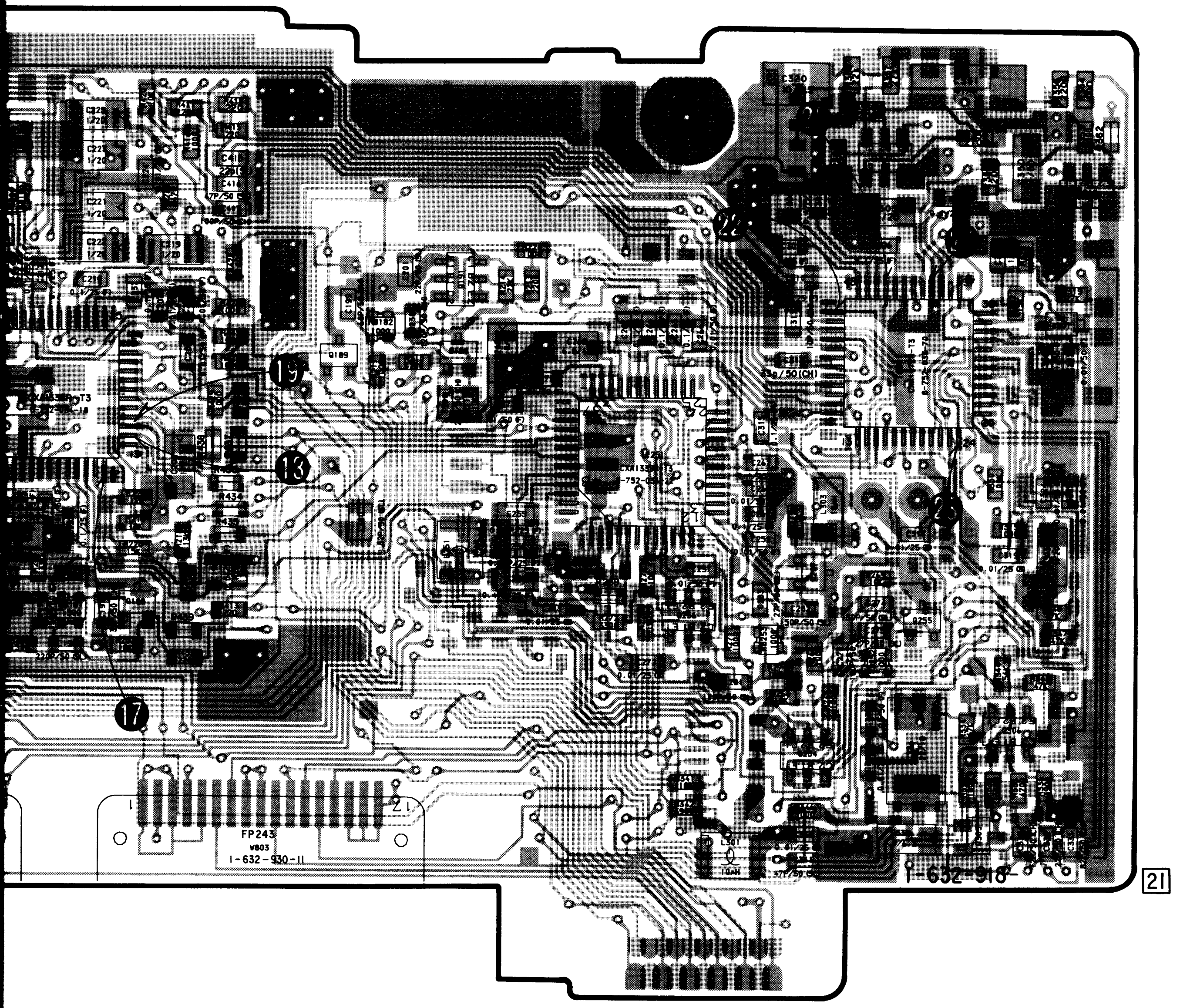


**VC-66P** BOARD (CONDUCTOR SIDE)

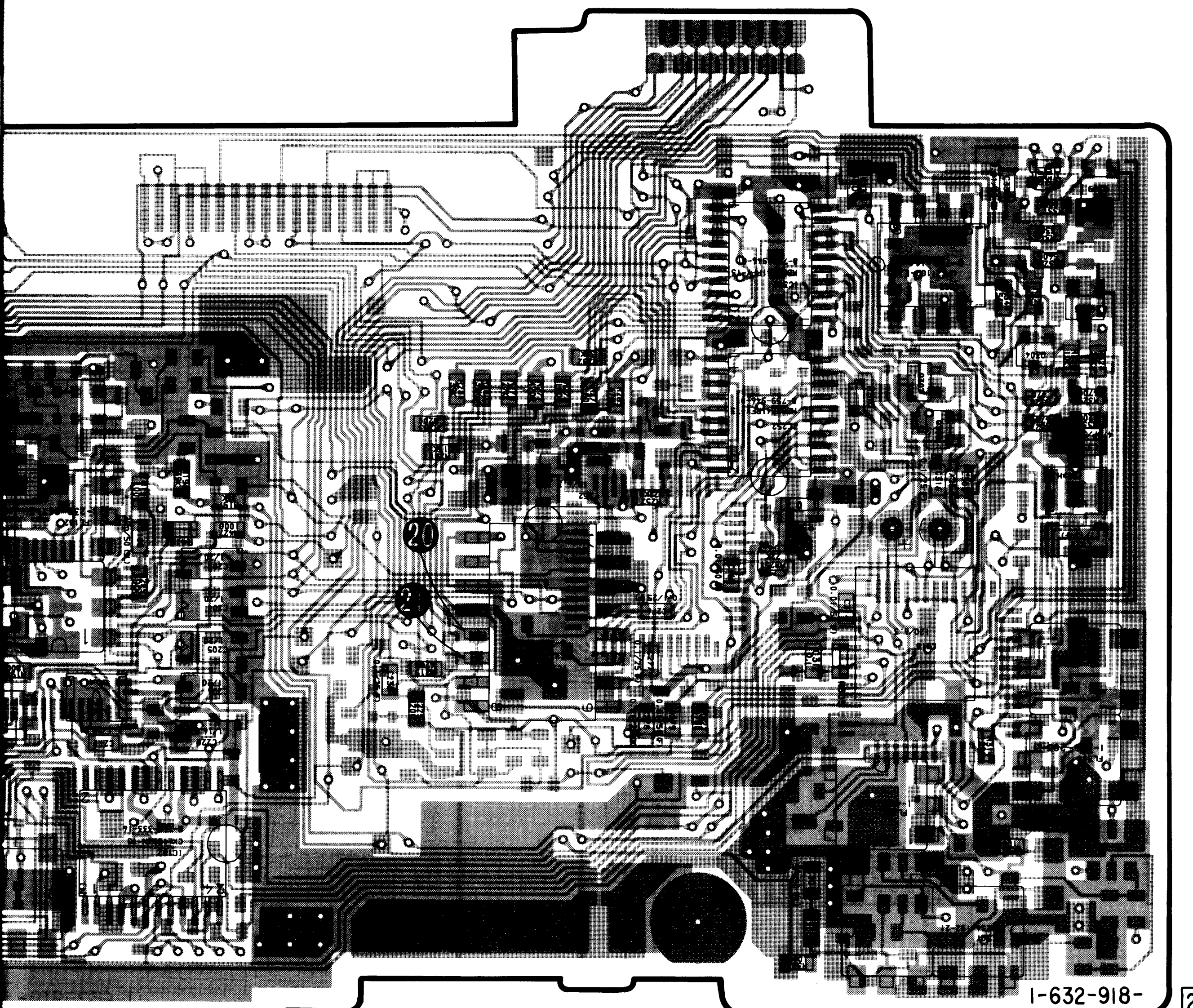

A
B
C
D
E
⑫
⑪
⑮
⑭
⑬
L142
10µH
FP243
1-632-930-11
FP243
1-632-930-11

**VC-66P** BOARD (COMPONENT SIDE)


F
G
H
I
J
⑪
⑩
4 BOARD
②
③
④
⑤
⑥
⑦
⑧
⑨
26
1
2
3
4
5

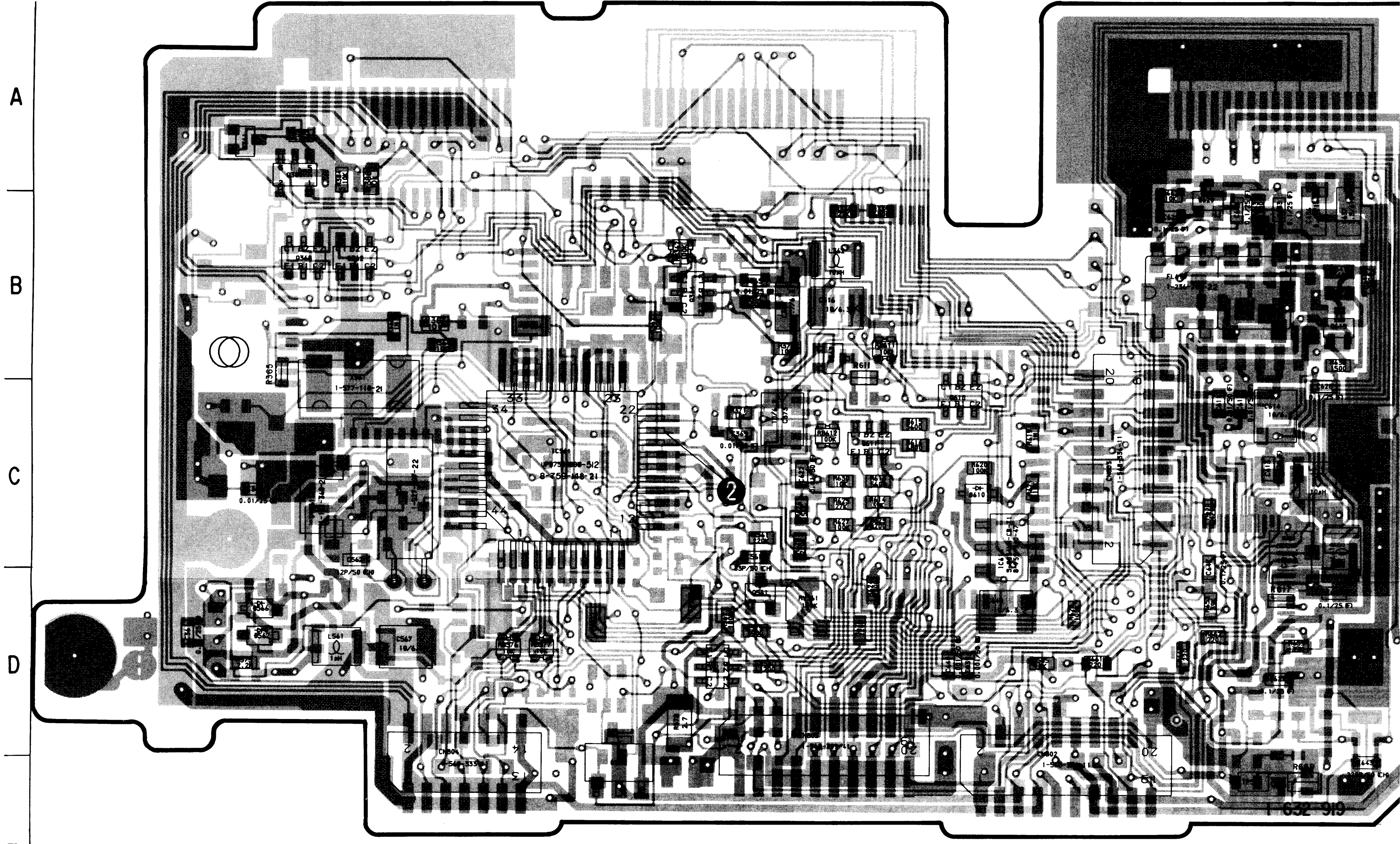


FP243
V803
1-632-930-11
1-632-918-

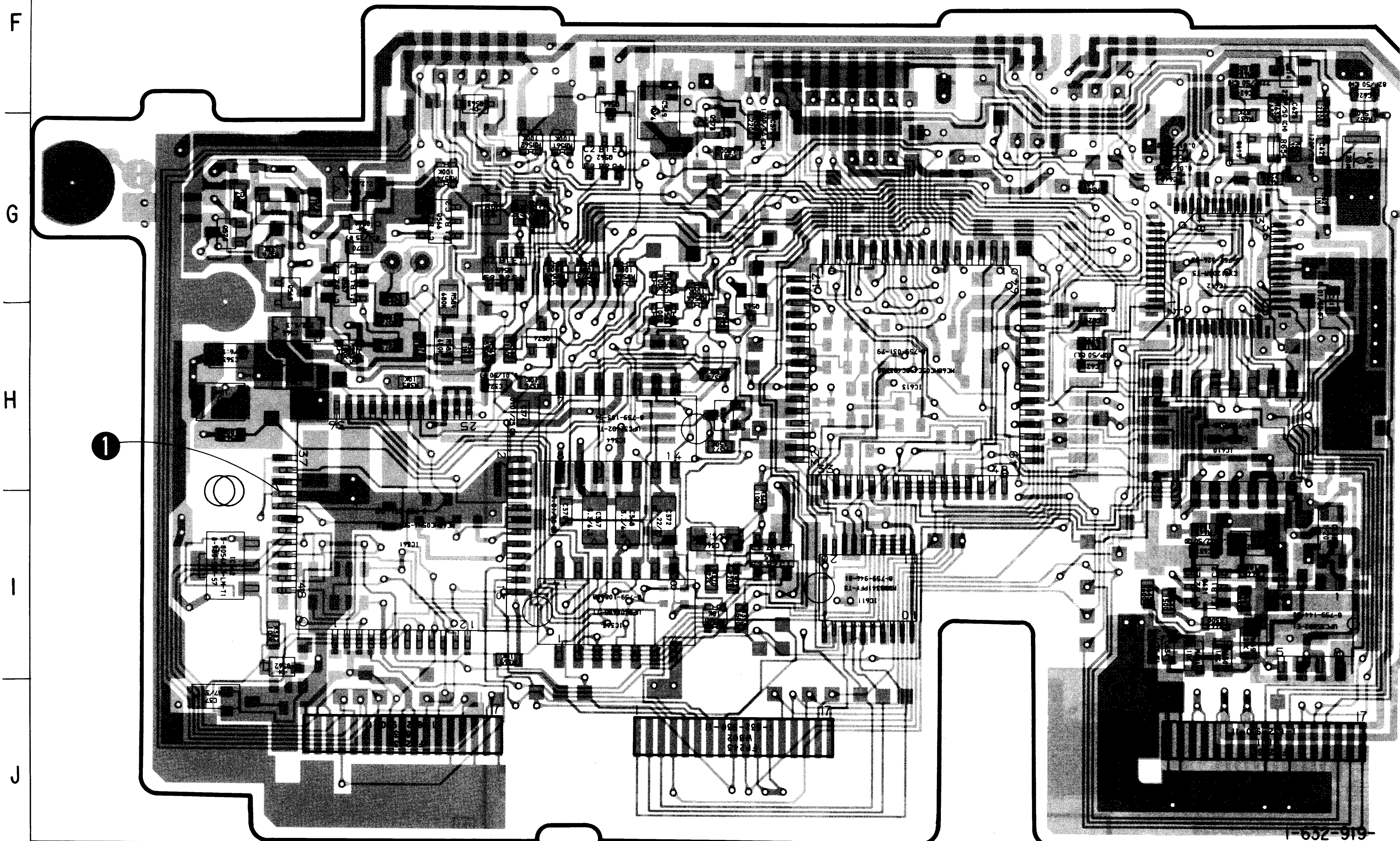


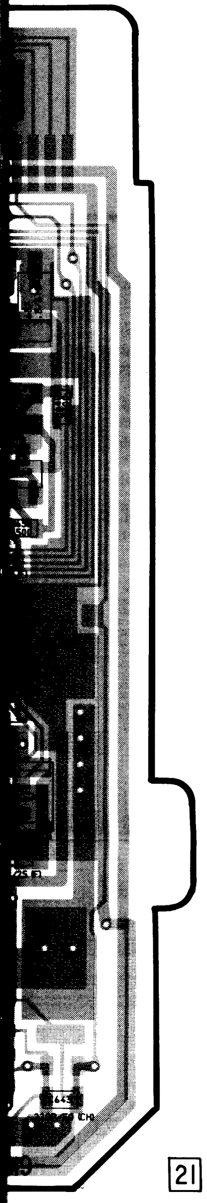
1-632-918-

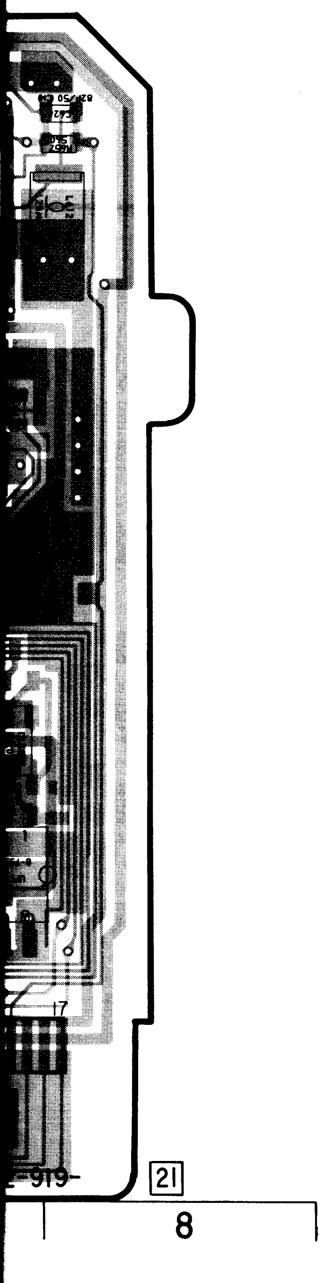
**DI-24P** BOARD (COMPONENT SIDE)


A
B
C
D
E
❷
1-632-919-

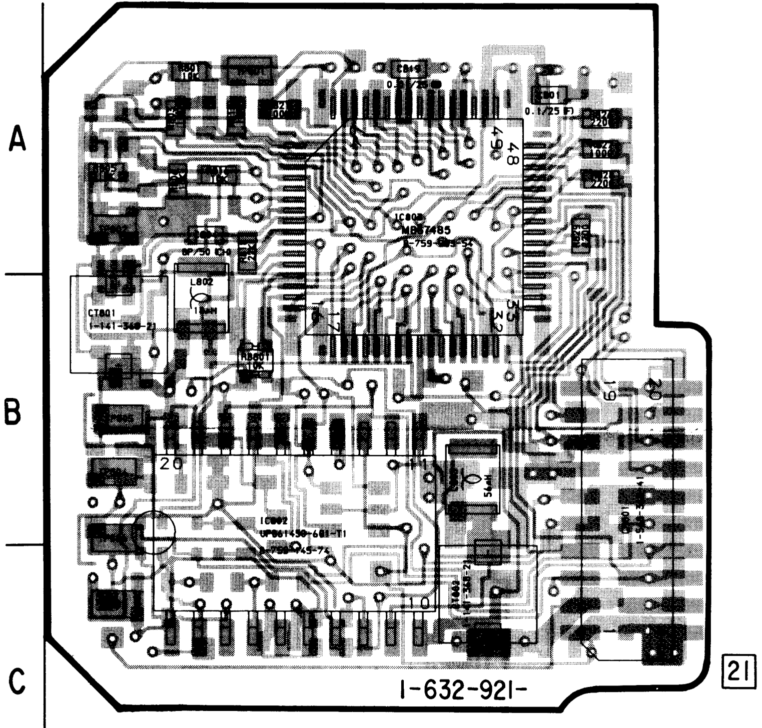
**DI-24P** BOARD (CONDUCTOR SIDE)


F
G
H
I
J
❶
1-632-919-
1
2
3
4
5
6
7

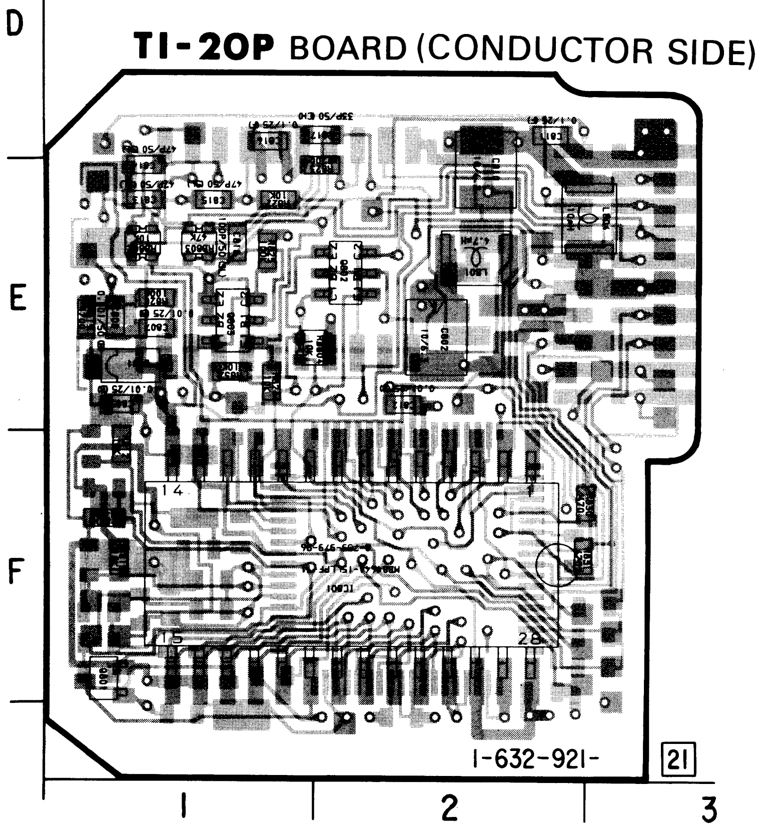




## TI-20P BOARD (COMPONENT SIDE)


A
B
C
IC801
CT801
L802
IC802
1-632-921-
21

## TI-20P BOARD (CONDUCTOR SIDE)

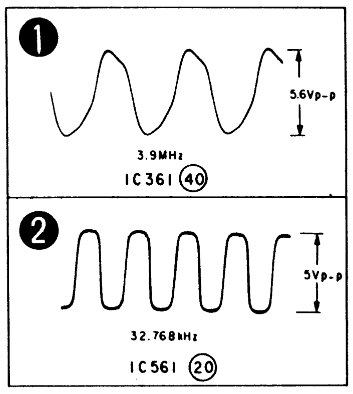

D
E
F
IC803
1-632-921-
21
1
2
3

- DI-24P and TI-20P boards have four layers structure but inner two layers' patterns are omitted.

**Caution:**

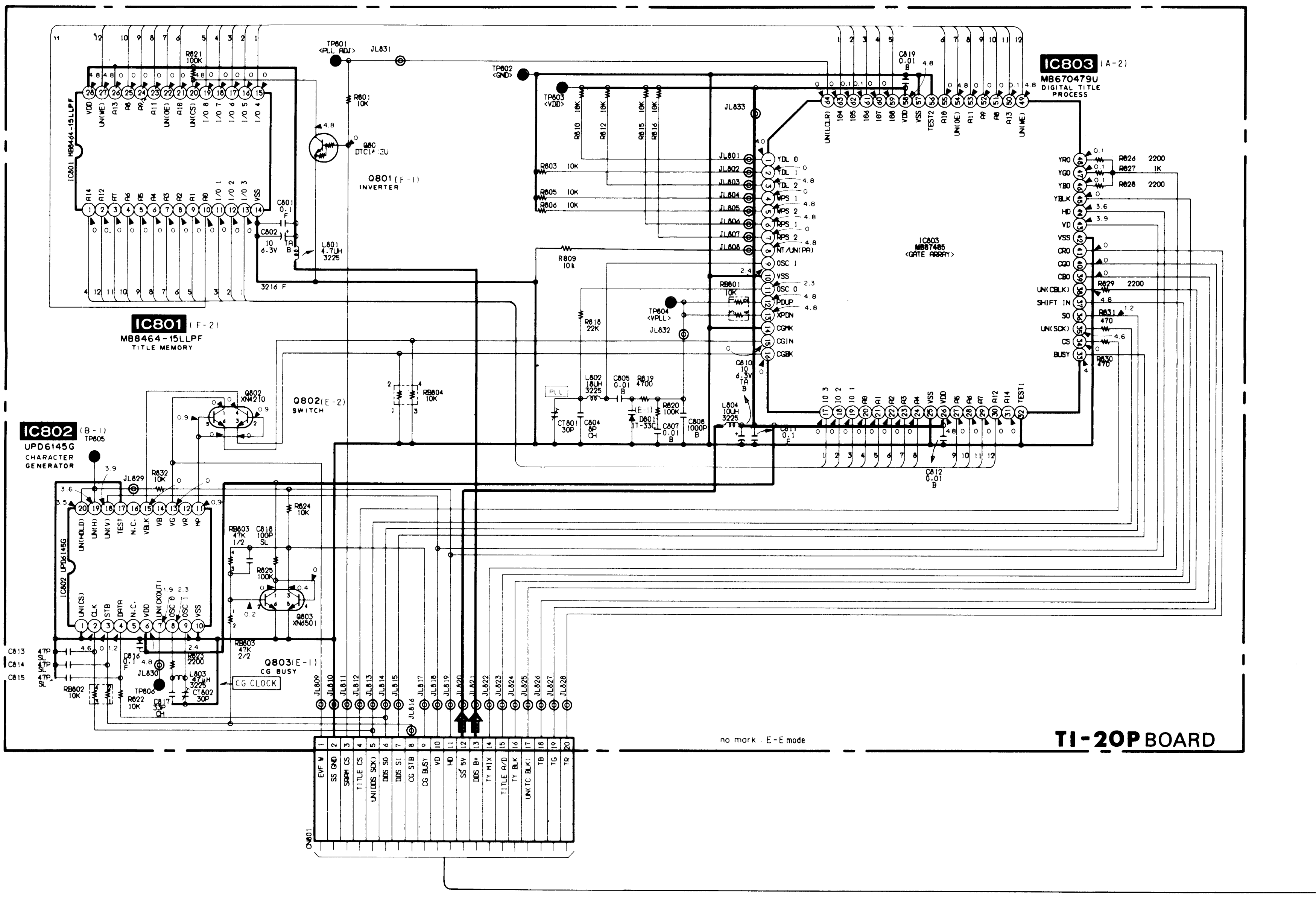
| | |
|---|---|
| Pattern face side: (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component Side) | Parts on the parts face side seen from the pattern face are indicated. |

**DI-24P** BOARD



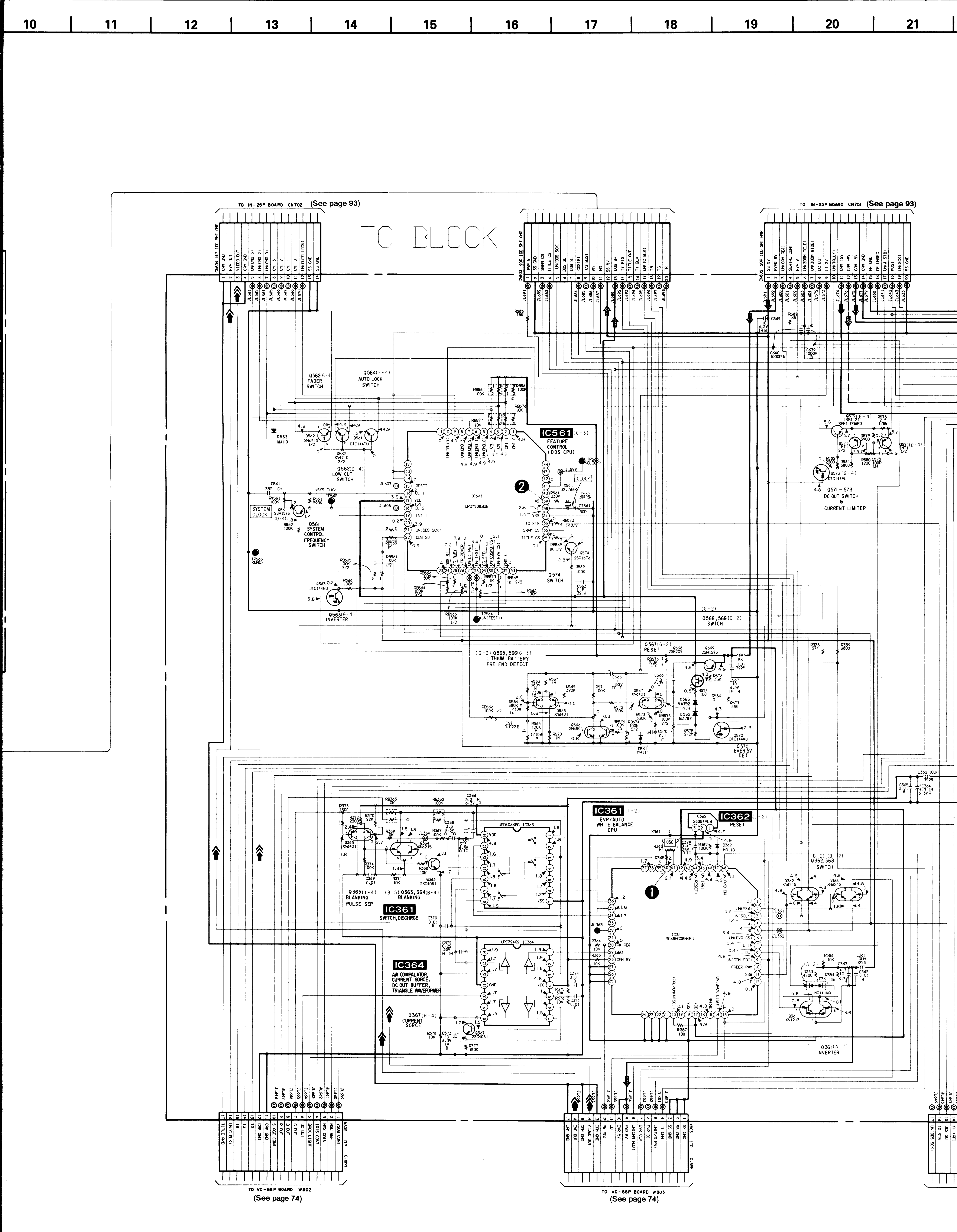
## DI-24P (AUTO FOCUS/DIGITAL TITLER), TI-20P (DIGITAL TITLER) SCHEMATIC DIAGRAM

– Ref. No.: DI-24P, TI-20P Boards; 1,000 series –



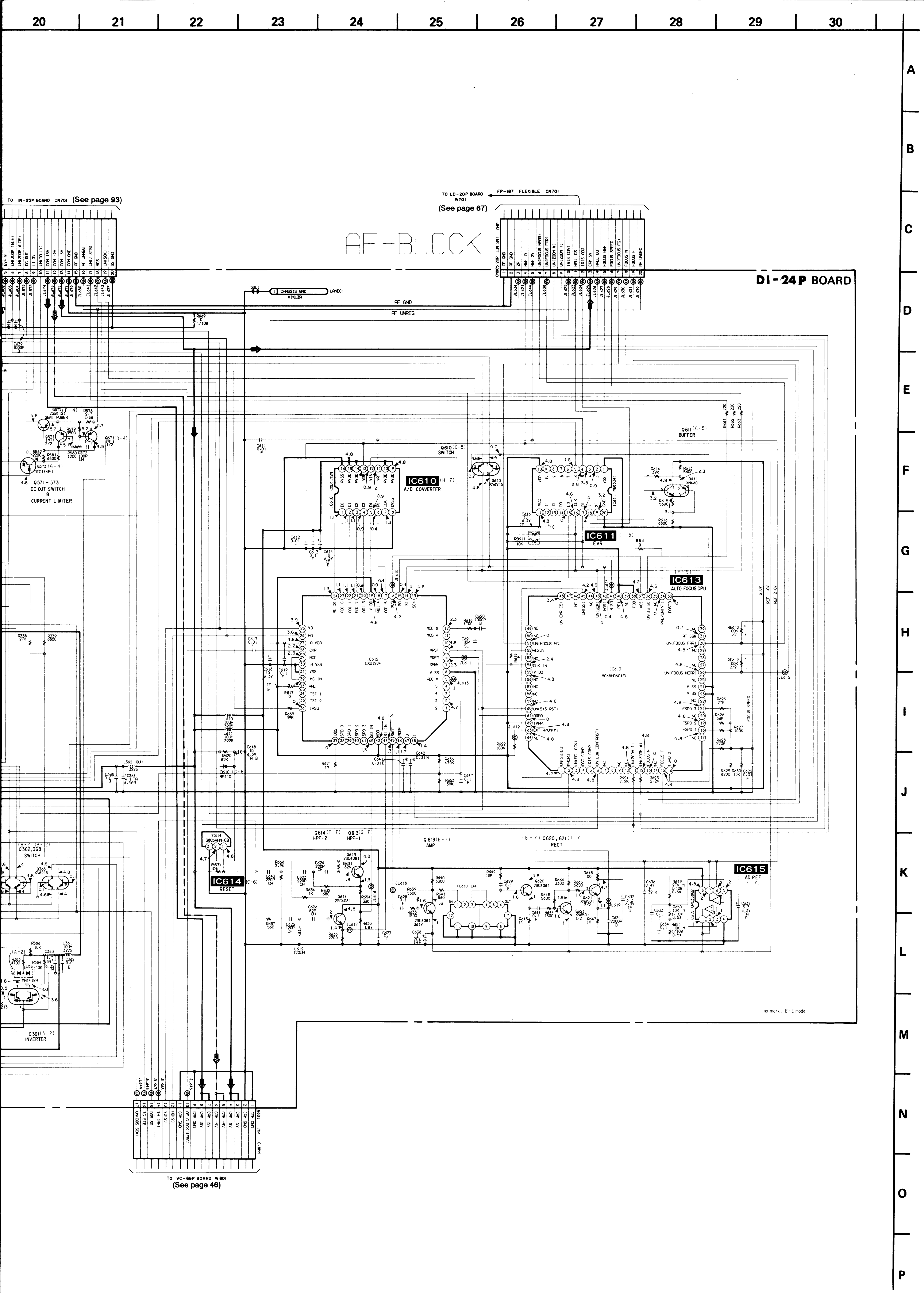
IC801 (F-2)
MB8464-15LLPF
TITLE MEMORY
IC802 (B-1)
UPD6145G
CHARACTER GENERATOR
IC803 (A-2)
MB670479U
DIGITAL TITLE PROCESS
IC803 MB87485 <GATE ARRAY>
Q801 (F-1) INVERTER
Q802 (E-2) SWITCH
Q803 (E-1) CG BUSY
TP801 <PLL ADJ>
TP802 <GND>
TP803 <VDD>
TP804 <PLL>
TP805
TP806
CG CLOCK
CN801
EVF W
SS GND
SRAM CS
TITLE CS
UNI(DDS SCK)
DDS SO
DDS SI
CG STB
CG BUSY
VD
HD
SS 5V
DDS B+
TY MIX
TITLE R/O
TY BLK
UNITC BLK
TB
TG
TR
no mark : E-E mode
TI-20P BOARD

: REC Y Signal
: REC Y/CHROMA Signal



10
11
12
13
14
15
16
17
18
19
20
21
FC-BLOCK
TO IN-25P BOARD CN702 (See page 93)
TO IN-25P BOARD CN701 (See page 93)
TO VC-66P BOARD W802 (See page 74)
TO VC-66P BOARD W803 (See page 74)
IC561 FEATURE CONTROL (DDS CPU)
IC561 UPD7508BGB
Q562 FADER SWITCH
Q564 AUTO LOCK SWITCH
Q562 LOW CUT SWITCH
Q561 SYSTEM CONTROL FREQUENCY SWITCH
SYSTEM CLOCK
Q563 INVERTER
Q574 SWITCH
Q568, 569 SWITCH
Q567 RESET
Q565, 566 LITHIUM BATTERY PRE END DETECT
Q570 EVER 5V DET
Q571 - 573 DC OUT SWITCH & CURRENT LIMITER
Q572 SEMI POWER
IC361 EVR/AUTO WHITE BALANCE CPU
IC362 RESET
IC361 SWITCH, DISCHRGE
IC364 AW COMPALATOR, CURRENT SORCE, DC OUT BUFFER, TRIANGLE WAVEFORMER
Q365 BLANKING PULSE SEP
Q363, 364 BLANKING
Q367 CURRENT SORCE
Q362, 368 SWITCH
Q361 INVERTER
UPD4066BG IC363
UPC324G2 IC364
IC361 MC68HC05N4FU

AUTO FOCUS/DIGITAL TITLER AUT


20
21
22
23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
TO IN-25P BOARD CN701 (See page 93)
TO LD-20P BOARD W701 (See page 67)
FP-187 FLEXIBLE CN701
AF-BLOCK
DI-24P BOARD
CHASSIS GND
KIKUZA
AF GND
AF UNREG
Q572 (E-4) 2SB1121 SEMI POWER
Q571-573 DC OUT SWITCH & CURRENT LIMITER
Q610 (C-5) SWITCH
IC610 (H-7) A/D CONVERTER
CXD1172M
IC611 (I-5) EVR
Q611 (C-5) BUFFER
IC612 CXD1204
IC613 (H-5) AUTO FOCUS CPU
MC68HC05C4FU
IC614 S80854HN-CB
IC614 (C-6) RESET
Q614 (F-7) HPF-2
Q613 (G-7) HPF-1
Q619 (B-7) AMP
(B-7) Q620, 621 (I-7) RECT
FL610 LPF
IC615 AD REF
Q362,368 SWITCH
Q361 (A-2) INVERTER
FOCUS SPEED
no mark : E-E mode
TO VC-66P BOARD W801 (See page 46)

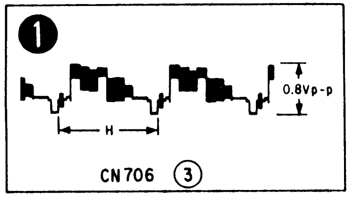
## IN-25 (INTERFACE), JK-48P (ZOOM REMOTE/EARPHONE JACK), LI-15 (LITIUM BATTERY), MA-38P (MIC AMP), ST-28 (START/STOP SWITCH, STANDBY SWITCH), AG-2

– Ref. No.: IN-25, JK-48P, LI-15, MA-38P, ST-28, AG-2 Boards; 2,000 series –

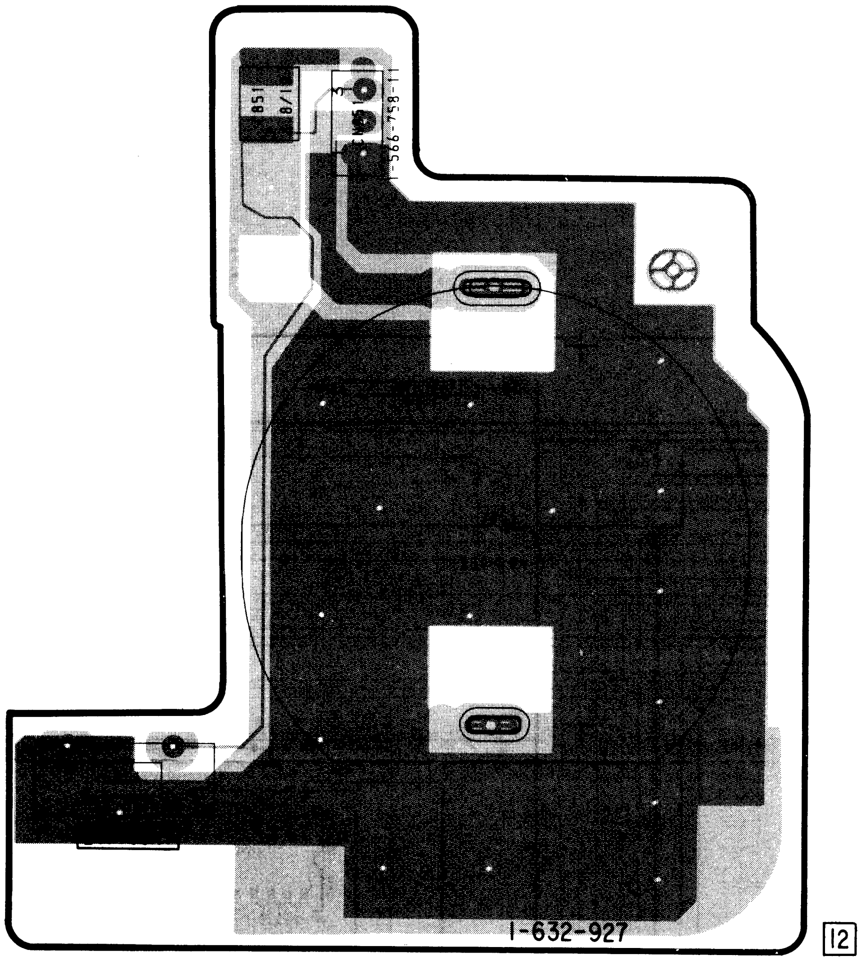
- **MA-38P board has four layers structure but inner two layers' patterns are omitted.**

| **Caution:** | |
|---|---|
| Pattern face side: (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component Side) | Parts on the parts face side seen from the parts face are indicated. |

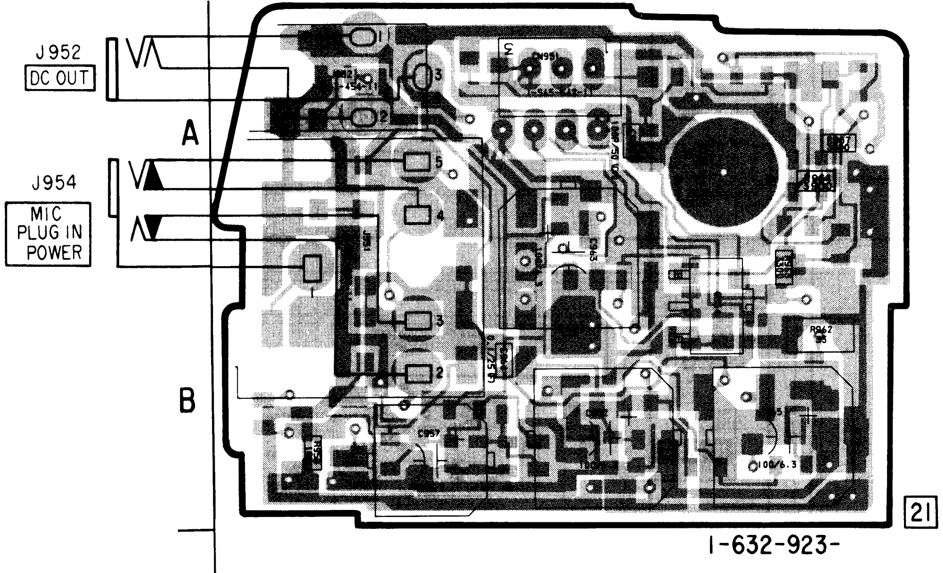
**IN-25** BOARD



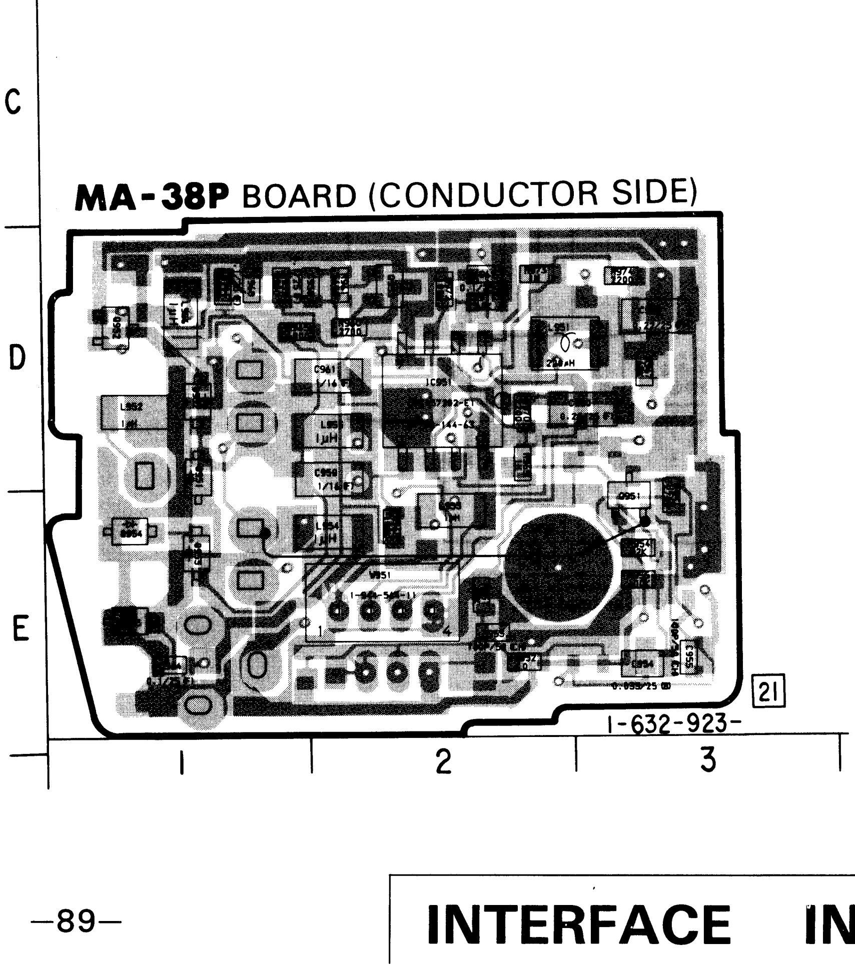
**LI-15** BOARD (COMPONENT SIDE)


B51 8/1
1-566-758-11
1-632-927
12

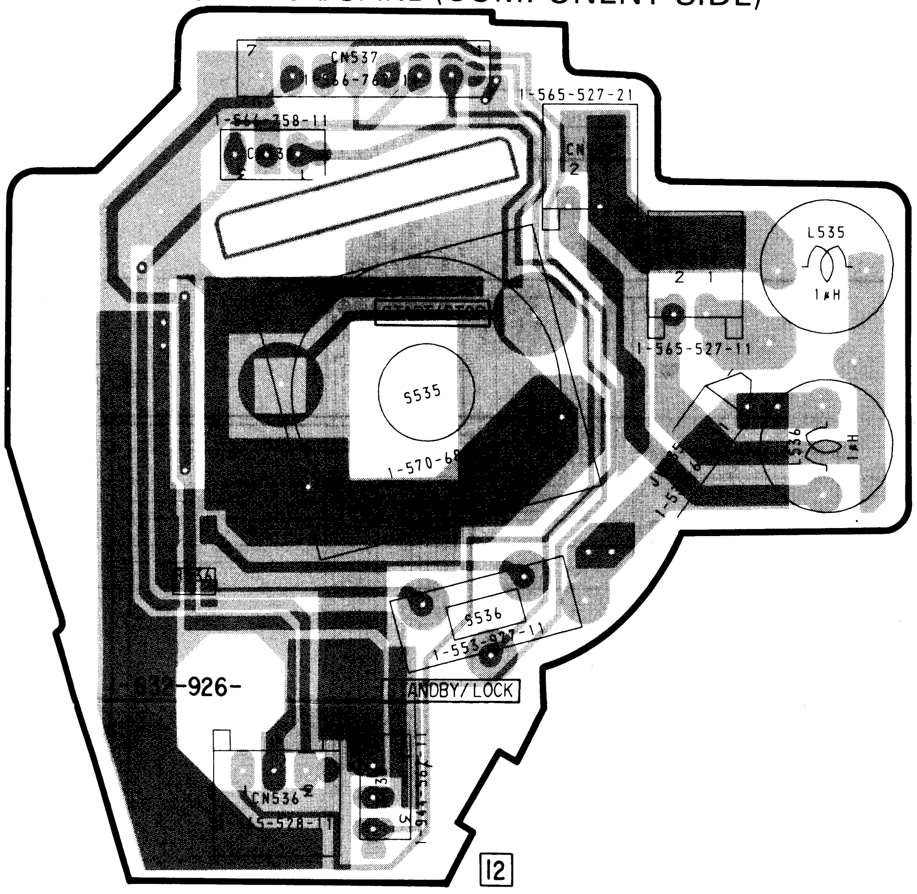
**MA-38P** BOARD (COMPONENT SIDE)


J952
DC OUT
J954
MIC PLUG IN POWER
A
B
21
1-632-923-

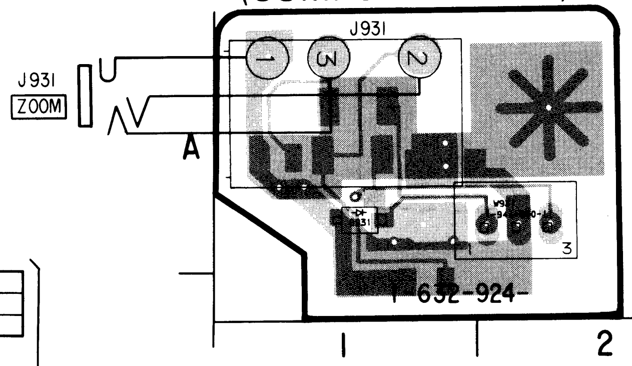
**MA-38P** BOARD (CONDUCTOR SIDE)


C
D
E
21
1-632-923-
1
2
3

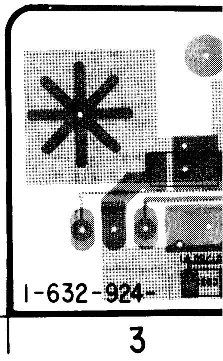
## ST-28 BOARD (COMPONENT SIDE)

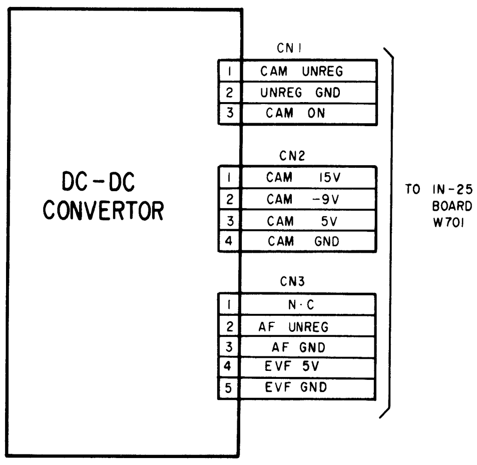

CN537
1-565-527-21
1-566-758-11
CN
L535
1μH
1-565-527-11
S535
1-570-6
L536
1μH
S536
1-553-927-11
STANDBY/LOCK
-632-926-
CN536
12

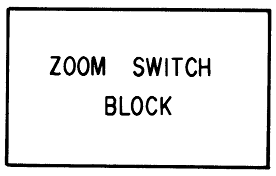
## JK-48P BOARD (COMPONENT SIDE)


J931
J931
ZOOM
A
1
3
2
3
1-632-924-
21
1
2

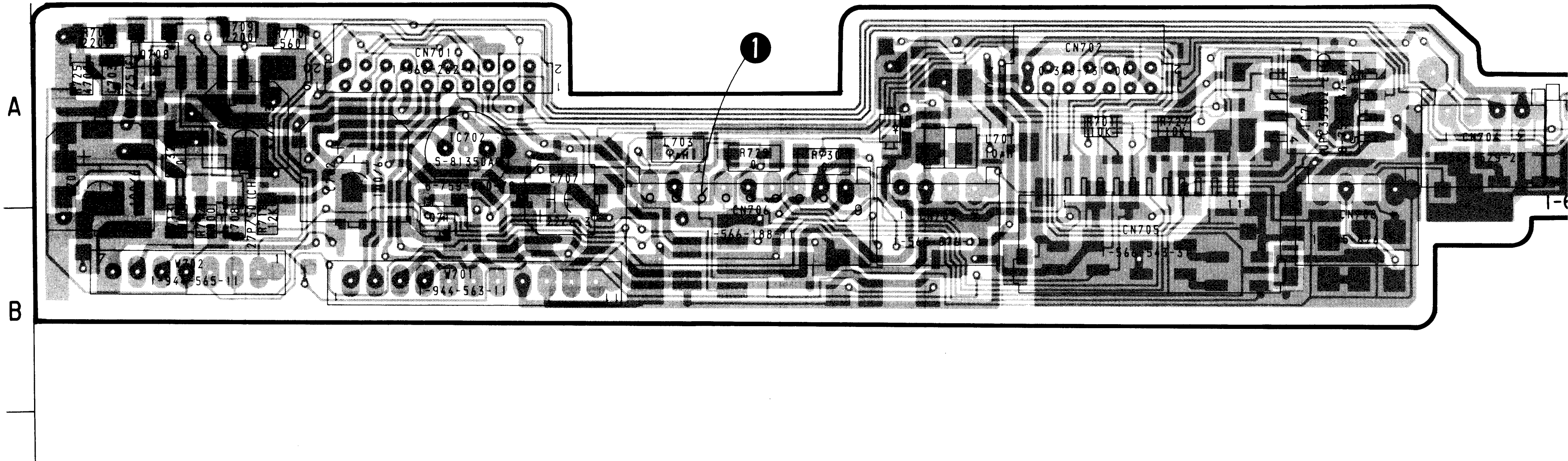
## JK-48P BOARD (CONDUCTOR SIDE)



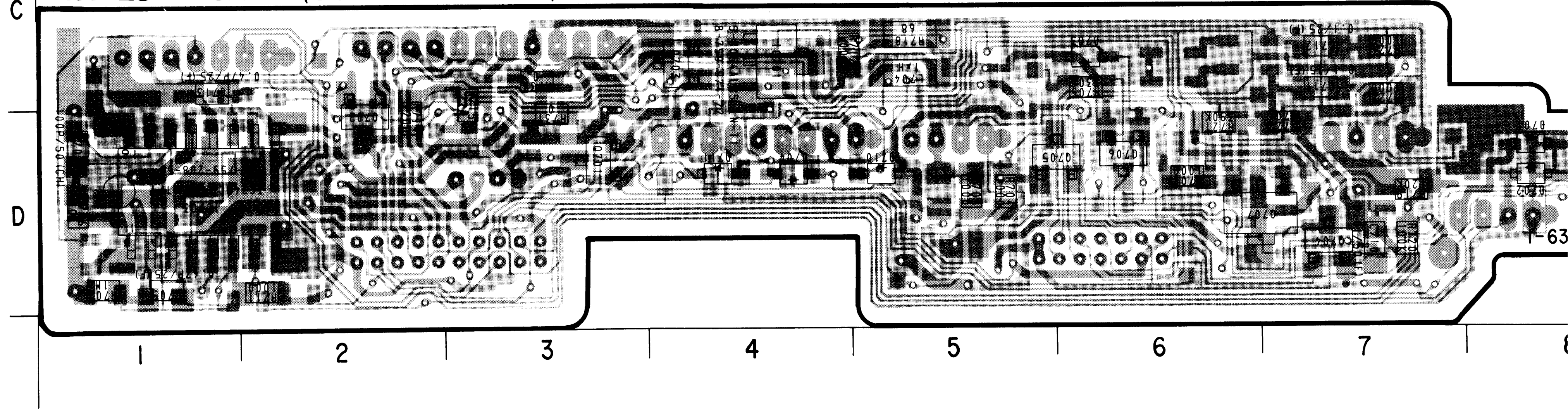

DC-DC CONVERTOR
CN1
1 CAM UNREG
2 UNREG GND
3 CAM ON
CN2
1 CAM 15V
2 CAM -9V
3 CAM 5V
4 CAM GND
CN3
1 N·C
2 AF UNREG
3 AF GND
4 EVF 5V
5 EVF GND
TO IN-25 BOARD W701


ZOOM SWITCH BLOCK

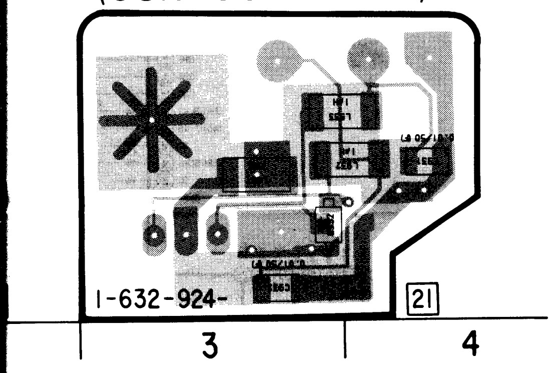
## IN-25 BOARD (COMPONENT SIDE)

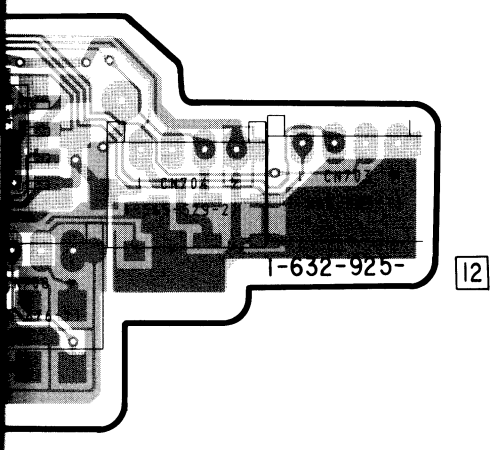

❶
A
B
CN701
CN702
IC707
L703
CN704
CN705
CN706
V702
V701
1-566-188-
1-944-565-11
1-944-563-11

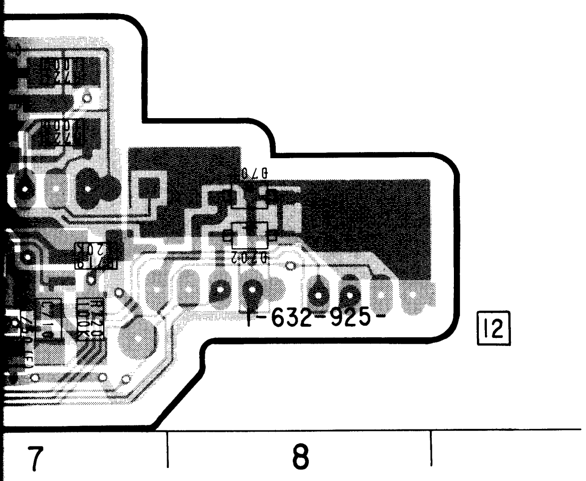
## IN-25 BOARD (CONDUCTOR SIDE)


C
D
1
2
3
4
5
6
7
8
1-63

**JK-48P** BOARD
(CONDUCTOR SIDE)

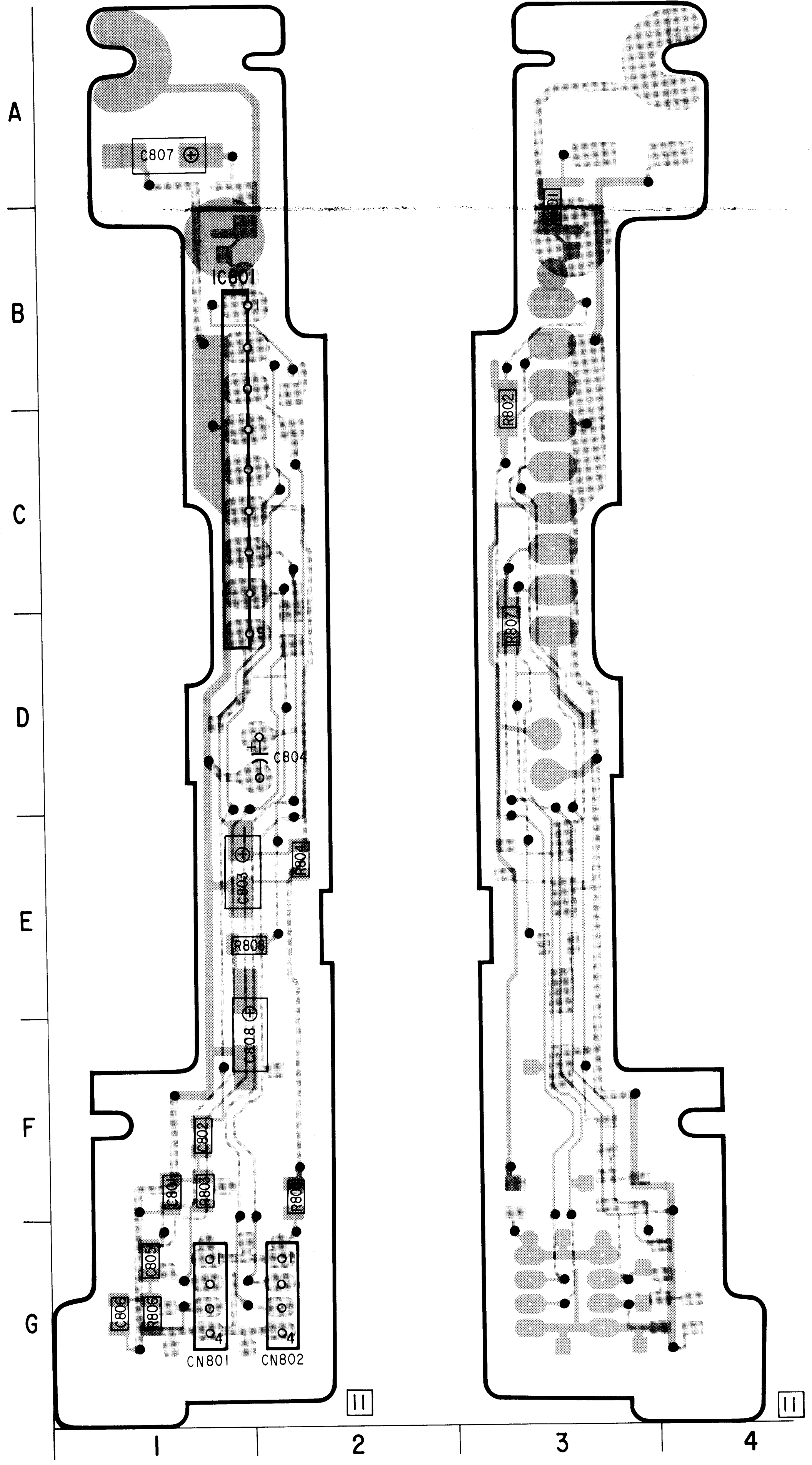

1-632-924-
21
3
4


CN702
CN701
1-632-925-
12


1-632-925-
12
7
8

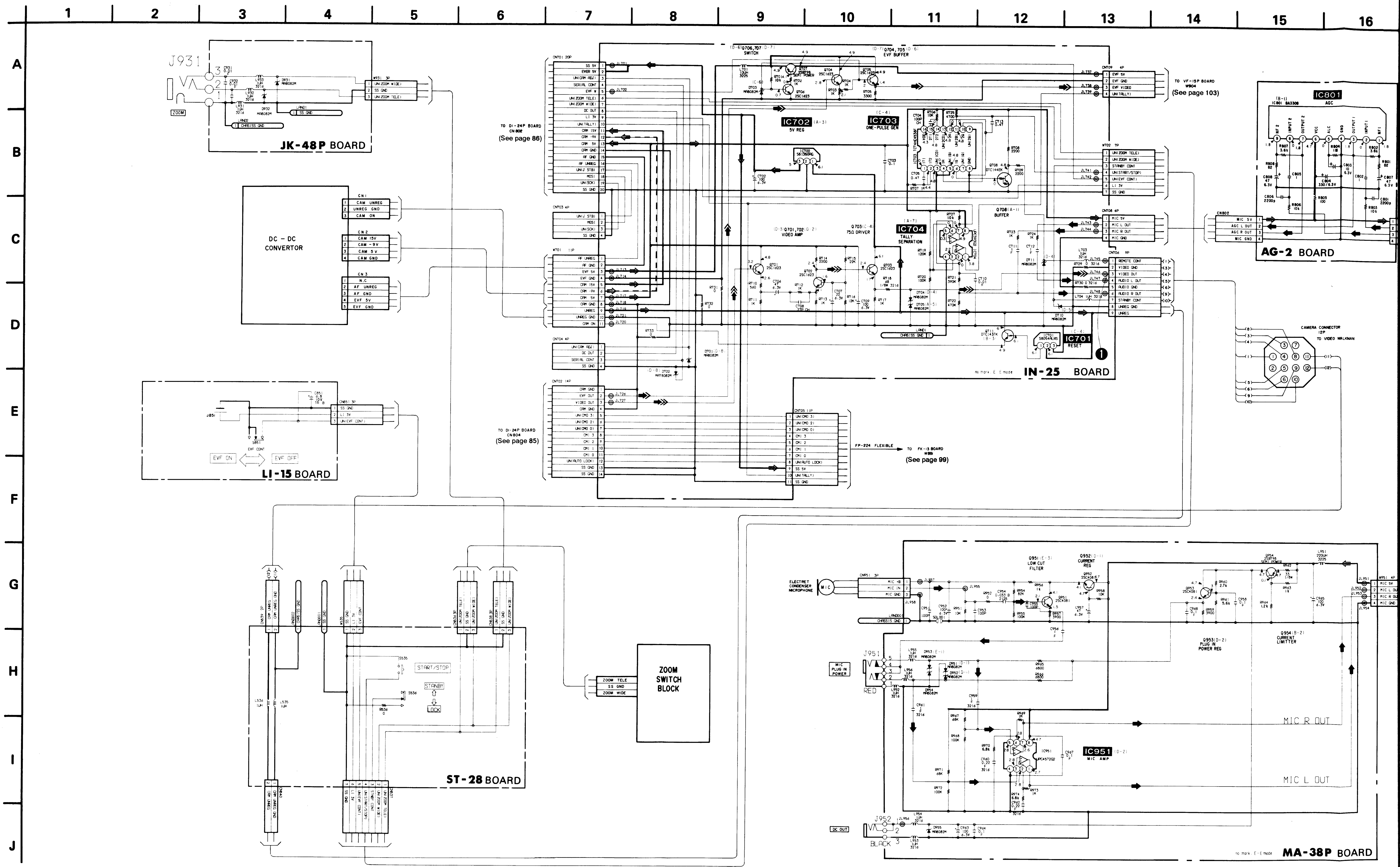
**AG-2** BOARD
(COMPONENT SIDE)

**AG-2** BOARD
(CONDUCTOR SIDE)


A
B
C
D
E
F
G
C807
IC801
1
9
C804
C803
R804
R806
C808
C802
C801
R803
R801
C805
C806
R805
CN801
CN802
4
11
R802
R807
IC801
11
1
2
3
4

## IN-25 (INTERFACE), JK-48P (ZOOM REMOTE/EARPHONE JACK), LI-15 (LITIUM BATTERY), MA-38P (MIC AMP), ST-28 (START/STOP SWITCH, STANDBY SWITCH), AG-2 (AGC) SCHEMATIC DIAGRAM

– Ref. No.: IN-25, JK-48P, LI-15, MA-38P, ST-28, AG-2 Boards; 2,000 series –



1
2
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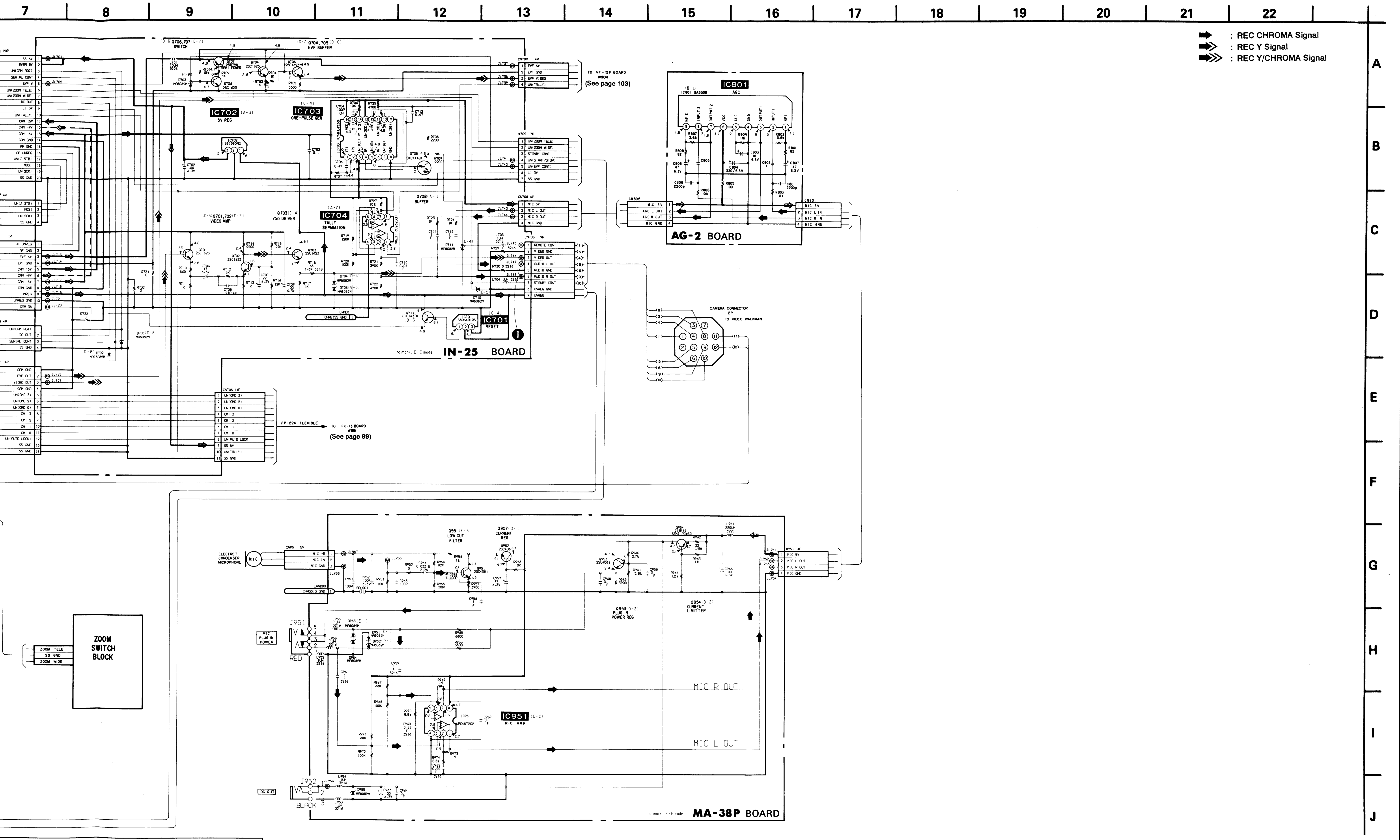
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
J931
ZOOM
JK-48P BOARD
DC - DC CONVERTOR
CN1
CAM UNREG
UNREG GND
CAM ON
CN2
CAM 15V
CAM -9V
CAM 5V
CAM GND
CN3
N.C
AF UNREG
AF GND
EVF 5V
EVF GND
J851
EVF ON
EVF OFF
LI-15 BOARD
TO DI-24P BOARD CN802
(See page 86)
TO DI-24P BOARD CN804
(See page 85)
IC702 5V REG
IC703 ONE-PULSE GEN
IC704 TALLY SEPARATION
IC701 RESET
Q706,707 SWITCH
Q704,705 EVF BUFFER
Q701,702 VIDEO AMP
Q703 75Ω DRIVER
Q708 BUFFER
TO VF-15P BOARD W904
(See page 103)
FP-224 FLEXIBLE
TO FK-13 BOARD W881
(See page 99)
IN-25 BOARD
IC801 AGC
AG-2 BOARD
CAMERA CONNECTOR 12P
TO VIDEO WALKMAN
START/STOP
STANBY
LOCK
ST-28 BOARD
ZOOM SWITCH BLOCK
ZOOM TELE
SS GND
ZOOM WIDE
ELECTRET CONDENSER MICROPHONE
MIC
Q951 LOW CUT FILTER
Q952 CURRENT REG
Q953 PLUG IN POWER REG
Q954 CURRENT LIMITTER
J951
MIC PLUG IN POWER
RED
MIC R OUT
MIC L OUT
IC951 MIC AMP
J952
DC OUT
BLACK
MA-38P BOARD
no mark : E-E mode

## A-38P (MIC AMP), ST-28 (START/STOP SWITCH, STANDBY SWITCH), AG-2 (AGC) SCHEMATIC DIAGRAM



7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
Q706,707 SWITCH
Q704,705 EVF BUFFER
CN709 4P
EVF 5V
EVF GND
EVF VIDEO
UNI(TALLY)
TO VF-15P BOARD W904
(See page 103)
IC702 5V REG
IC703 ONE-PULSE GEN
W702 7P
UNI(ZOOM TELE)
UNI(ZOOM WIDE)
STANBY CONT
UNI(START/STOP)
UNI(EVF CONT)
LI 3V
SS GND
CN708 4P
MIC 5V
MIC L OUT
MIC R OUT
MIC GND
Q701,702 VIDEO AMP
Q703 75Ω DRIVER
IC704 TALLY SEPARATION
Q708 BUFFER
CN706 9P
REMOTE CONT
VIDEO GND
VIDEO OUT
AUDIO L OUT
AUDIO GND
AUDIO R OUT
STANBY CONT
UNREG GND
UNREG
IC701 RESET
IN-25 BOARD
no mark : E-E mode
CN705 11P
FP-224 FLEXIBLE
TO FK-13 BOARD W861
(See page 99)
IC801 AGC
CN802
MIC 5V
AGC L OUT
AGC R OUT
MIC GND
CN801
MIC 5V
MIC L IN
MIC R IN
MIC GND
AG-2 BOARD
CAMERA CONNECTOR 12P
TO VIDEO WALKMAN
ELECTRET CONDENSER MICROPHONE
MIC
CN951 3P
Q951 LOW CUT FILTER
Q952 CURRENT REG
Q954 SEMI POWER
Q953 PLUG IN POWER REG
Q954 CURRENT LIMITTER
J951
MIC PLUG IN POWER
RED
IC951 MIC AMP
MIC R OUT
MIC L OUT
J952
DC OUT
BLACK
CN952 4P
MA-38P BOARD
ZOOM TELE
SS GND
ZOOM WIDE
ZOOM SWITCH BLOCK

➡ : REC CHROMA Signal

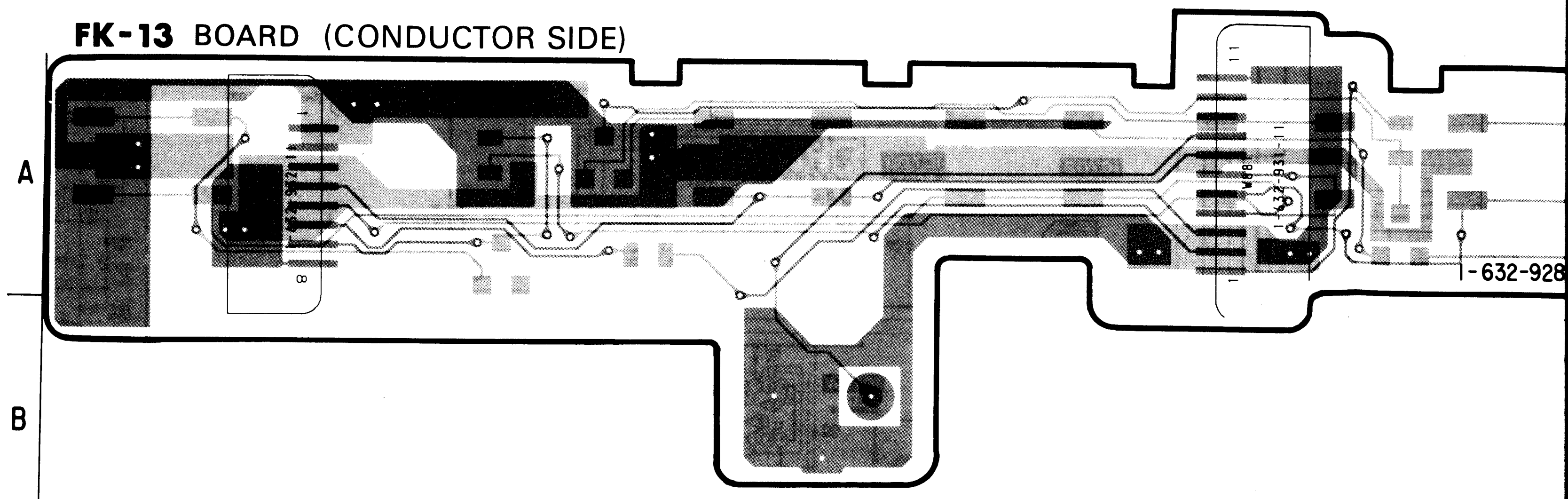
⇛ : REC Y Signal

⇛ : REC Y/CHROMA Signal

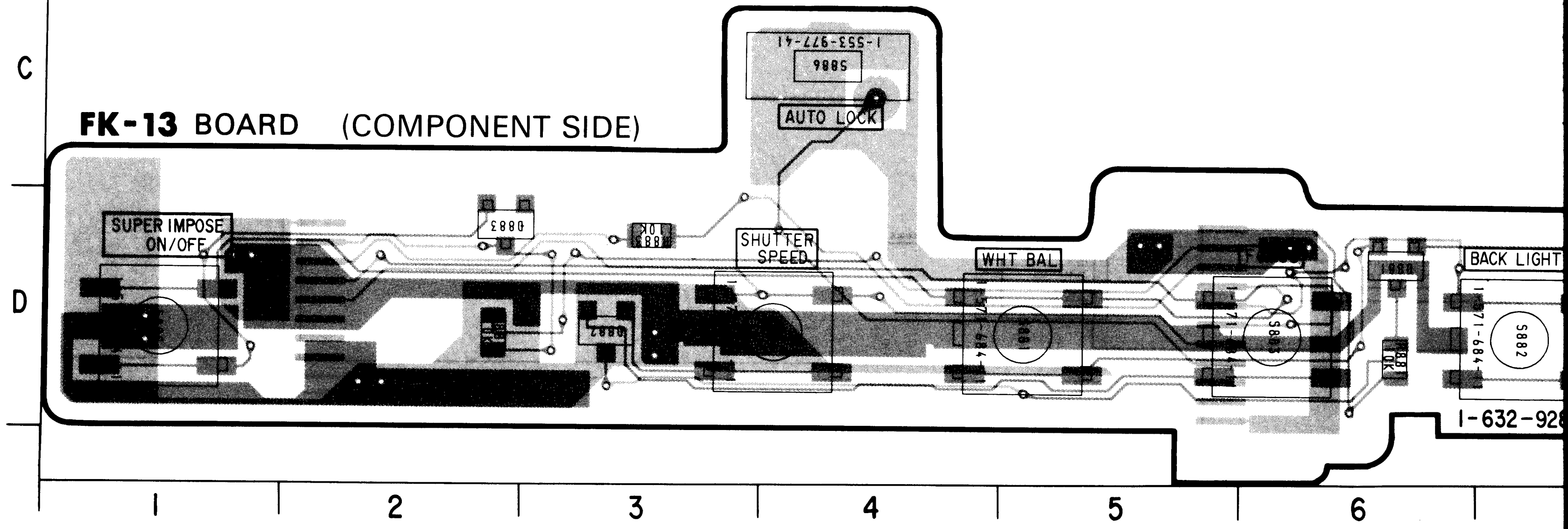
## FK-13, FK-17 (FUNCTION SWITCH) PRINTED WIRING BOARDS

– Ref. No.: FK-13, FK-17 Boards; 3,000 series –

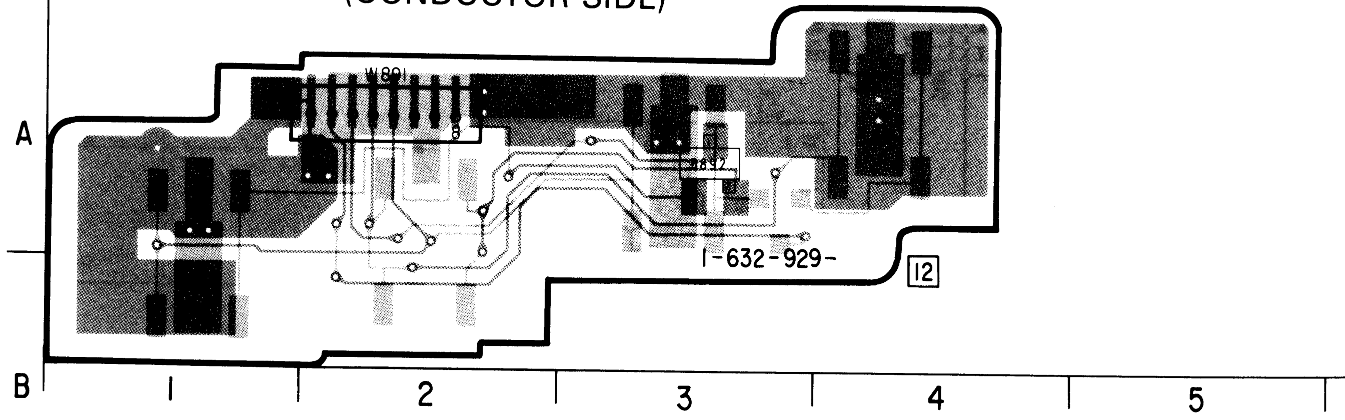
**FK-13** BOARD (CONDUCTOR SIDE)


A
B
8
W881
1-632-928

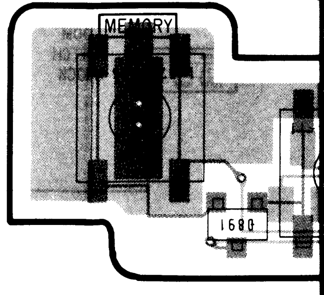
**FK-13** BOARD (COMPONENT SIDE)


C
D
1-553-977-41
S886
AUTO LOCK
SUPER IMPOSE ON/OFF
D883
R881
SHUTTER SPEED
WHT BAL
BACK LIGHT
S882
1-632-928
1
2
3
4
5
6

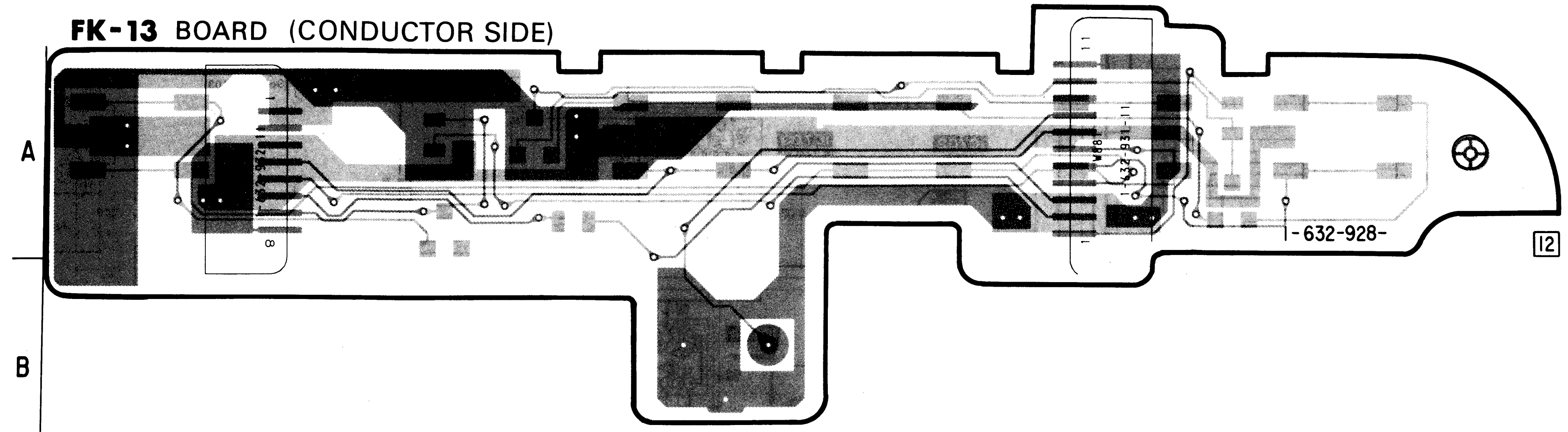
**FK-17** BOARD (CONDUCTOR SIDE)


A
B
W891
8
D892
1-632-929-
12
1
2
3
4
5
6

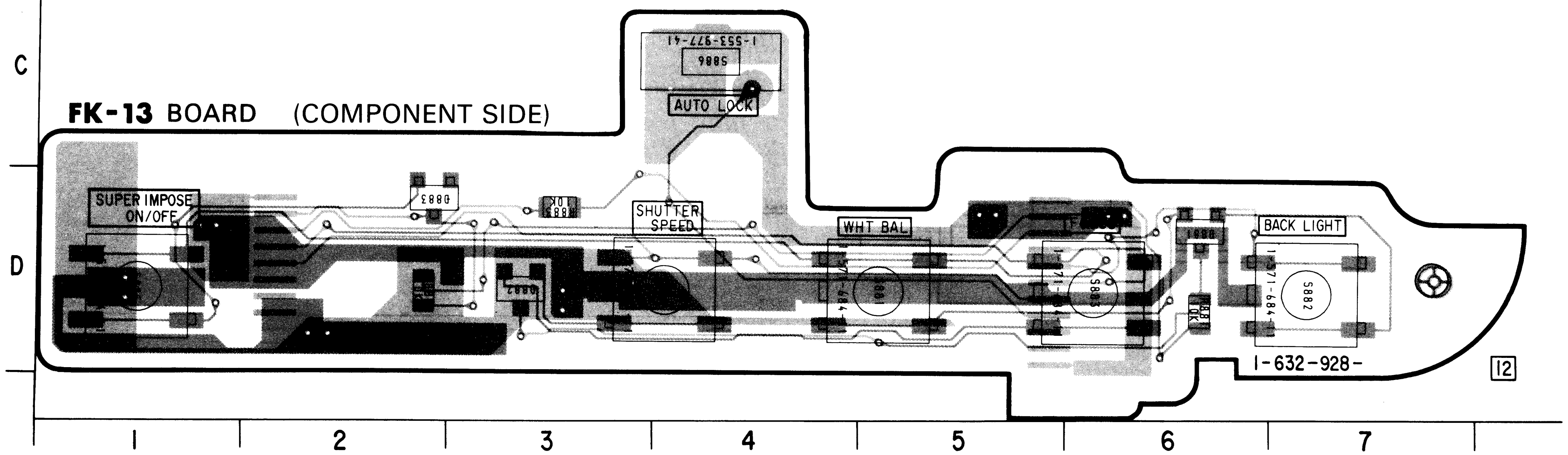
**FK-17** BOARD


MEMORY
D891

**FK-13** BOARD (CONDUCTOR SIDE)

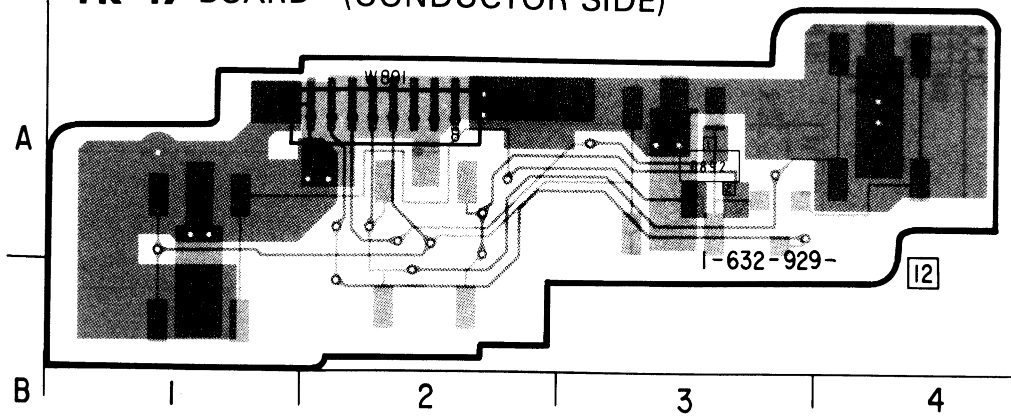

A
B
1-632-928-
12

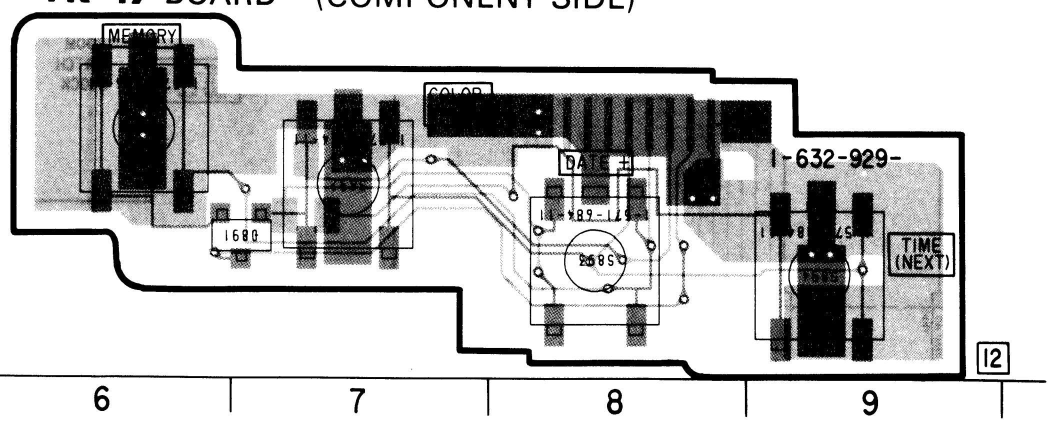
**FK-13** BOARD (COMPONENT SIDE)


C
D
1-553-977-41
S886
AUTO LOCK
SUPER IMPOSE ON/OFF
SHUTTER SPEED
WHT BAL
BACK LIGHT
S882
1-632-928-
12
1
2
3
4
5
6
7

**FK-17** BOARD (CONDUCTOR SIDE)

**FK-17** BOARD (COMPONENT SIDE)

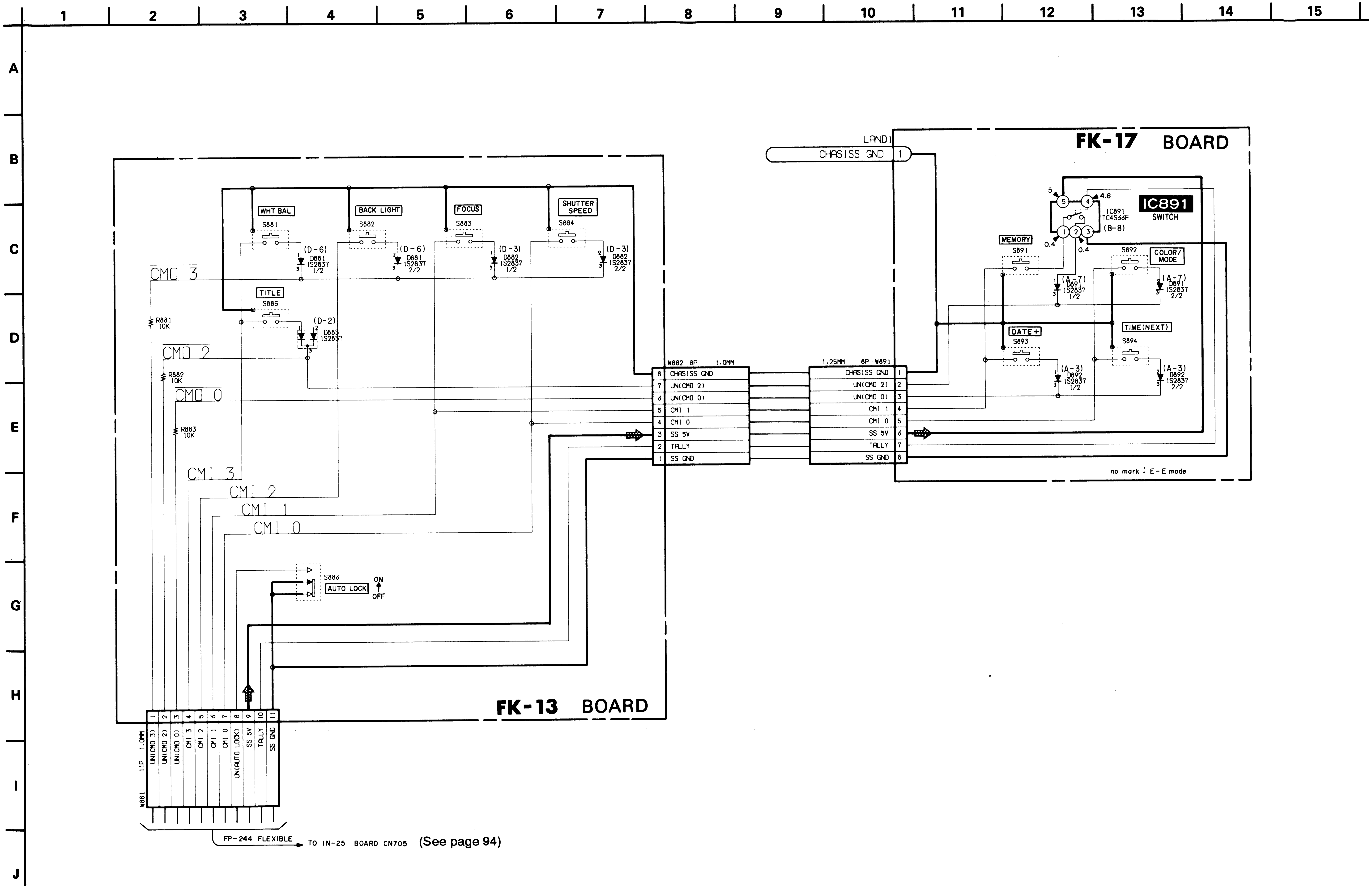

A
B
W801
1-632-929-
12


MEMORY
COLOR
DATE ±
1-632-929-
TIME (NEXT)
12

1
2
3
4
5
6
7
8
9

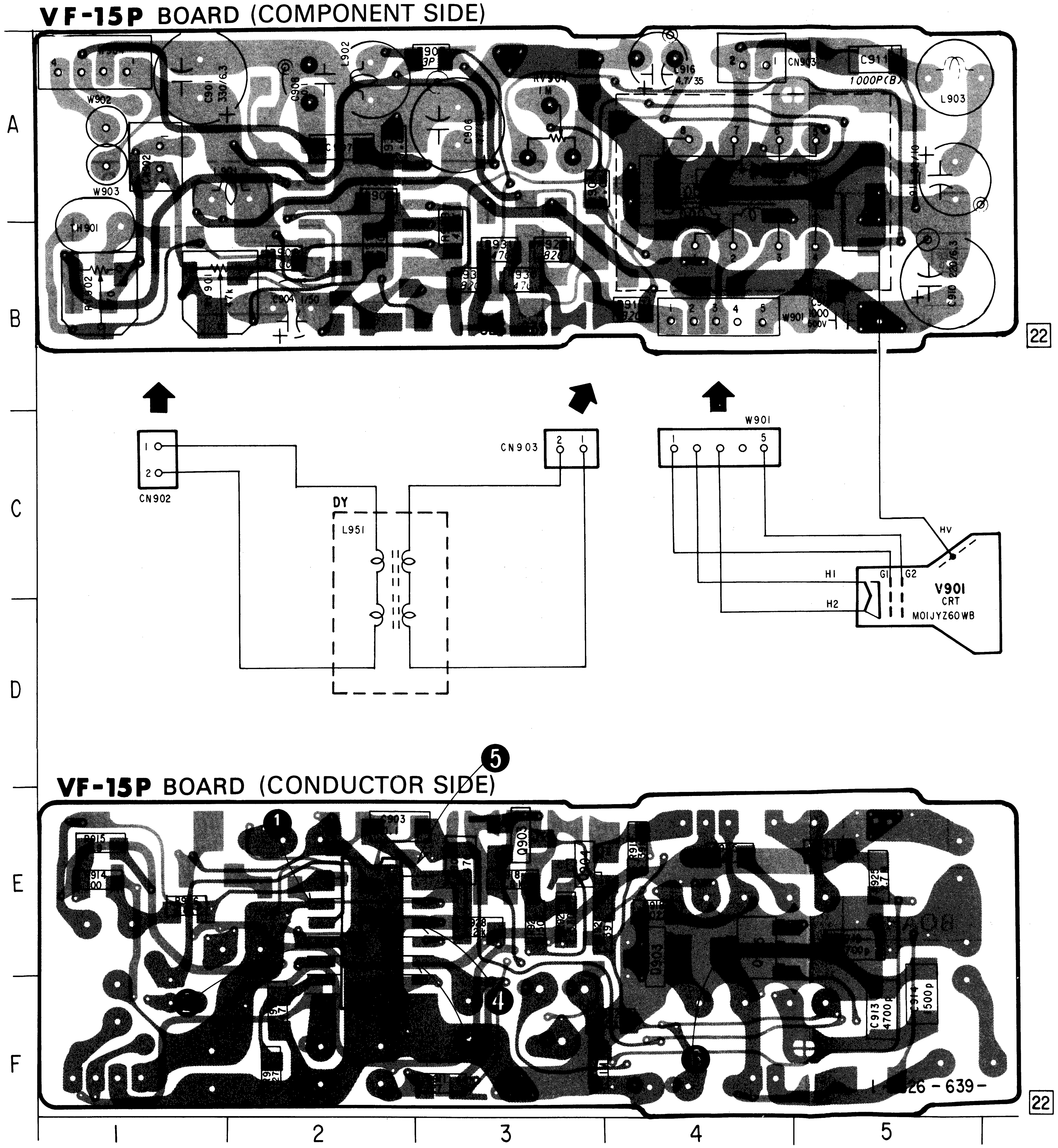
**FK-13, FK-17 (FUNCTION SWITCH) SCHEMATIC DIAGRAM**

– Ref. No.: FK-13, FK-17 Boards; 3,000 series –

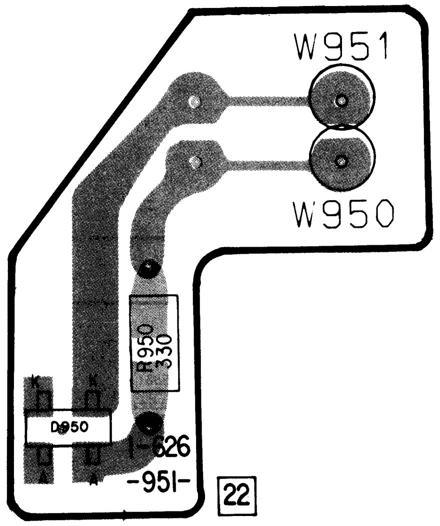

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
FK-13 BOARD
FK-17 BOARD
WHT BAL
S881
BACK LIGHT
S882
FOCUS
S883
SHUTTER SPEED
S884
(D-6)
D881
1S2837
1/2
(D-6)
D881
1S2837
2/2
(D-3)
D882
1S2837
1/2
(D-3)
D882
1S2837
2/2
TITLE
S885
(D-2)
D883
1S2837
CMO 3
CMO 2
CMO 0
CMI 3
CMI 2
CMI 1
CMI 0
R881
10K
R882
10K
R883
10K
S886
AUTO LOCK
ON
OFF
W882 8P 1.0MM
8 CHASISS GND
7 UN(CMO 2)
6 UN(CMO 0)
5 CMI 1
4 CMI 0
3 SS 5V
2 TALLY
1 SS GND
1.25MM 8P W891
CHASISS GND 1
UN(CMO 2) 2
UN(CMO 0) 3
CMI 1 4
CMI 0 5
SS 5V 6
TALLY 7
SS GND 8
LAND1
CHASISS GND 1
IC891
IC891
TC4S66F
(B-8)
SWITCH
4.8
5
0.4
0.4
MEMORY
S891
(A-7)
D891
1S2837
1/2
COLOR/MODE
S892
(A-7)
D891
1S2837
2/2
DATE+
S893
(A-3)
D892
1S2837
1/2
TIME(NEXT)
S894
(A-3)
D892
1S2837
2/2
no mark : E-E mode
W881 11P 1.0MM
1 UN(CMO 3)
2 UN(CMO 2)
3 UN(CMO 0)
4 CMI 3
5 CMI 2
6 CMI 1
7 CMI 0
8 UN(AUTO LOCK)
9 SS 5V
10 TALLY
11 SS GND
FP-244 FLEXIBLE
TO IN-25 BOARD CN705 (See page 94)

## VF-15P (VIEW FINDER), TL-22P, TL-23P (TALLY LED) SCHEMATIC DIAGRAM

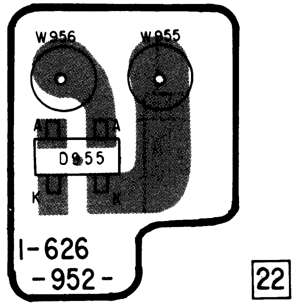
– Ref. No.: VF-15P, TL-22P, TL-23P Boards; 4,000 series –


VF-15P BOARD (COMPONENT SIDE)
A
B
C
D
E
F
1
2
3
4
5
W902
W903
CH901
C901 330/6.3
L902
C906
RV904 1M
L916 4.7/35
CN903
C911 1000P(B)
L903
C910 220/6.3
W901
22
CN902
CN903
W901
DY
L951
HV
H1
H2
G1
G2
V901
CRT
M01JYZ60WB
VF-15P BOARD (CONDUCTOR SIDE)
C903
C913 4700p
C914 1500p
1-626-639-
22

## TL-22P BOARD (COMPONENT SIDE)

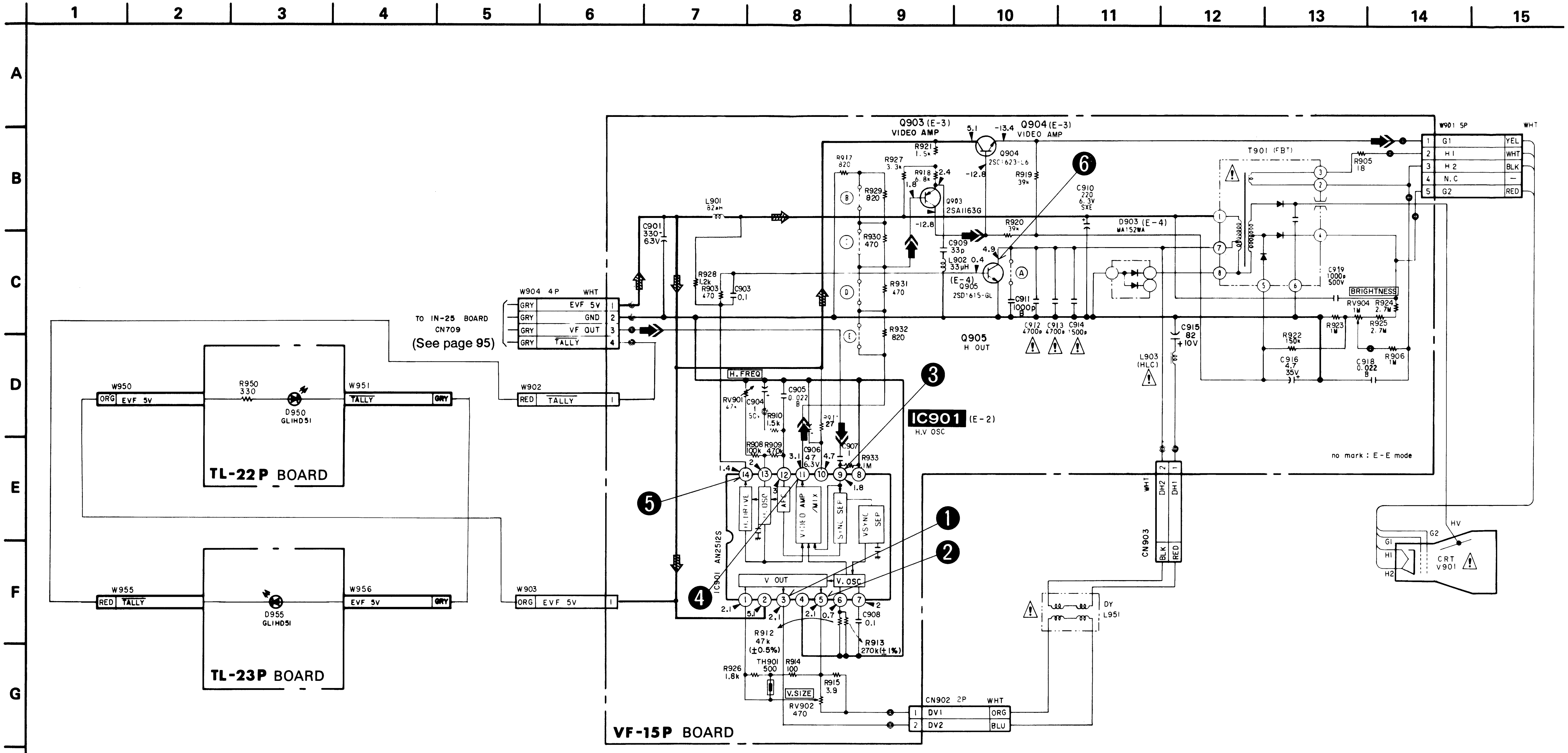

W951
W950
R950 330
D950
1-626
-951-
22

## TL-23P BOARD (COMPONENT SIDE)


W956
W955
D955
1-626
-952-
22

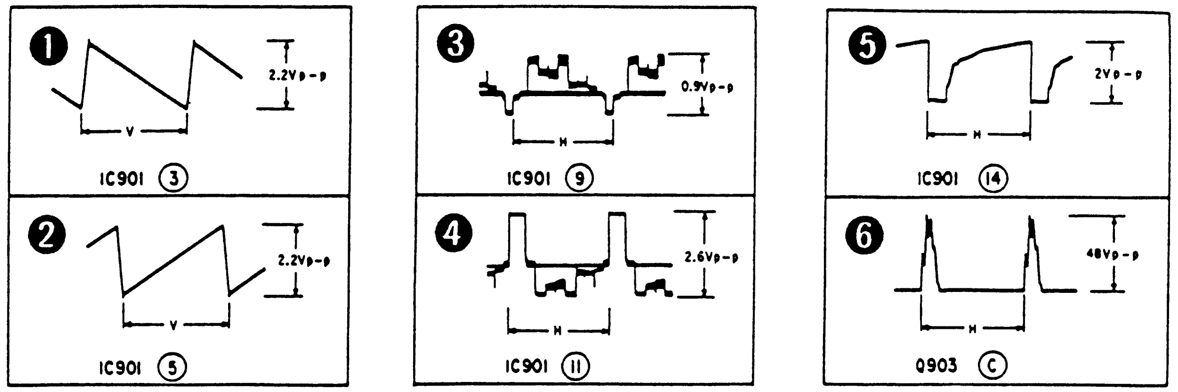
## VF-15P (VIEW FINDER), TL-22P, TL-23P (TALLY LED) PRINTED WIRING BOARDS

– Ref. No.: VF-15P, TL-22P, TL-23P Boards; 4,000 series –



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
Q903 (E-3)
VIDEO AMP
Q904 (E-3)
VIDEO AMP
Q904
2SC1623-L6
Q903
2SA1163G
Q905
2SD1615-GL
Q905
H OUT
T901 (FBT)
W901 5P
WHT
G1
H1
H2
N.C
G2
YEL
WHT
BLK
RED
D903 (E-4)
MA152WA
C919
1000p
500V
BRIGHTNESS
RV904 1M
R924 2.7M
R925 2.7M
R923 1M
R922 150k
C916 4.7 35V
C918 0.022
R906 1M
R905 18
C915 82 +10V
L903 (HLC)
C912 4700p
C913 4700p
C914 1500p
C911 1000p
C910 220 6.3V SXE
C909 33p
L902 0.4 33µH
R920 39k
R919 39k
R921 1.5k
R918 6.8k
R917 820
R927 3.3k
R929 820
R930 470
R931 470
R932 820
L901 82µH
C901 330 63V
R928 1.2k
R903 470
C903 0.1
W904 4P
WHT
GRY
EVF 5V
GND
VF OUT
TALLY
TO IN-25 BOARD CN709
(See page 95)
W950
ORG
EVF 5V
R950 330
D950 GL1HD51
W951
TALLY
GRY
TL-22P BOARD
W902
RED
TALLY
W955
RED
TALLY
D955 GL1HD51
W956
EVF 5V
GRY
TL-23P BOARD
W903
ORG
EVF 5V
H.FREQ
RV901 47k
C904 50
R910 1.5k
C905 0.022
R911 27
R908 100k
R909 470k
C906 47 6.3V
C907 1
R933 1M
IC901 (E-2)
H.V OSC
IC901 AN2512S
H.DRIVE
OSC
AFC
VIDEO AMP /MIX
SYNC SEP
V.SYNC SEP
V OUT
V.OSC
R912 47k (±0.5%)
TH901 500
R914 100
R926 1.8k
R915 3.9
C908 0.1
R913 270k(±1%)
V.SIZE
RV902 470
CN902 2P
WHT
DV1
DV2
ORG
BLU
VF-15P BOARD
CN903
WHT
DH2
DH1
BLK
RED
DY L951
CRT V901
HV
G1
G2
H1
H2
no mark : E-E mode
❶
❷
❸
❹
❺
❻

### VF-15P BOARD

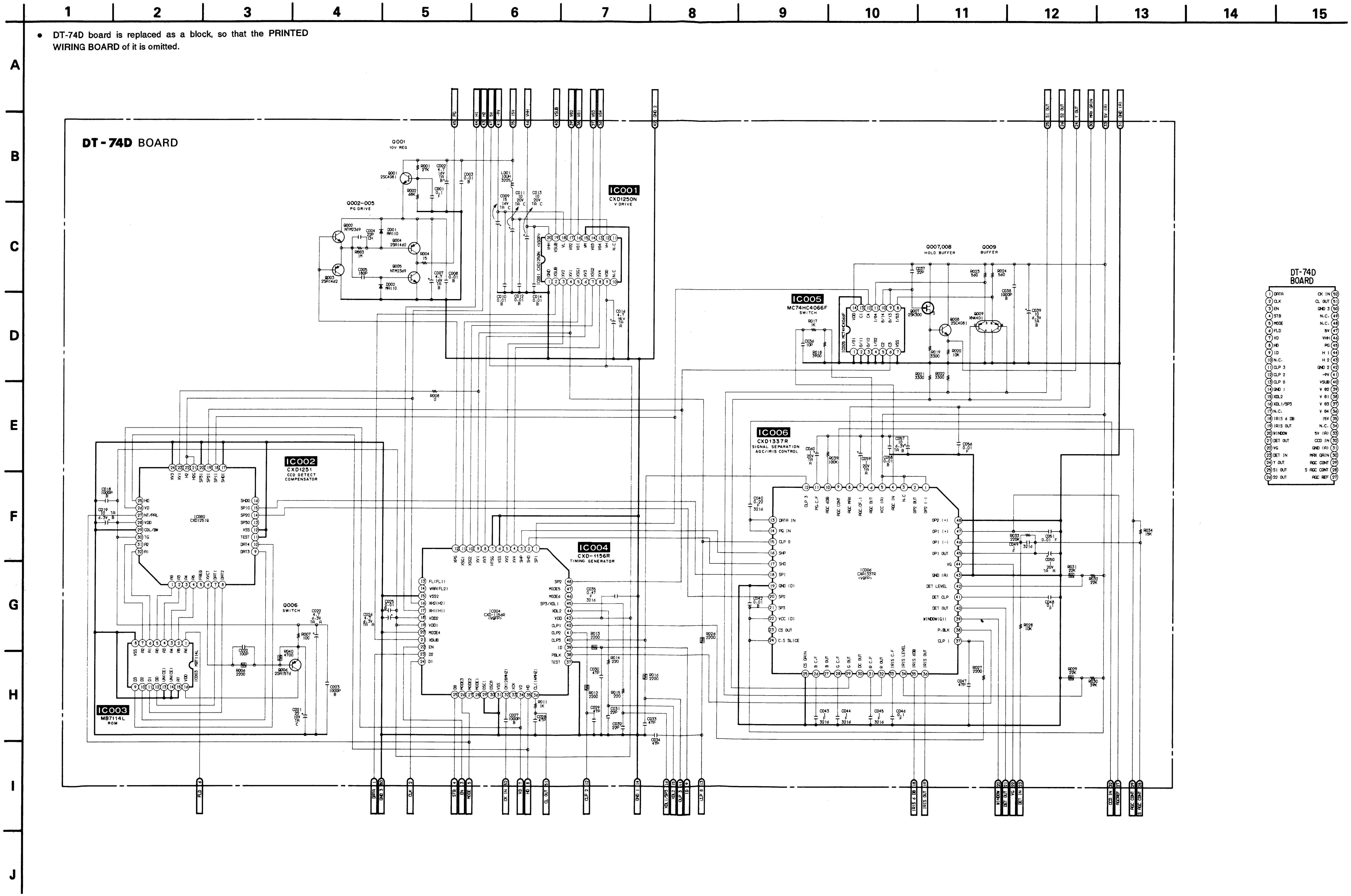


**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

➡ : REC Y Signal

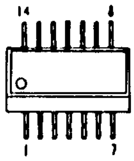
## DT-74D (CCD DRIVE/TIMING GENERATOR) SCHEMATIC DIAGRAM

- DT-74D board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
DT-74D BOARD
Q001 10V REG
Q002-005 PG DRIVE
IC001 CXD1250N V DRIVE
IC002 CXD1251 CCD DETECT COMPENSATOR
IC003 MB7114L ROM
IC004 CXD-1156R TIMING GENERATOR
IC005 MC74HC4066F SWITCH
IC006 CXD1337R SIGNAL SEPARATION AGC/IRIS CONTROL
Q006 SWITCH
Q007,008 HOLD BUFFER
Q009 BUFFER
DT-74D BOARD
① DATA
② CLK
③ EN
④ STB
⑤ MODE
⑥ FLD
⑦ VD
⑧ HD
⑨ ID
⑩ N.C.
⑪ CLP 3
⑫ CLP 2
⑬ CLP 0
⑭ GND 1
⑮ XDL2
⑯ XDL1/SP3
⑰ N.C.
⑱ IRIS 6 DB
⑲ IRIS OUT
⑳ WINDOW
㉑ DET OUT
㉒ VG
㉓ DET IN
㉔ Y OUT
㉕ S1 OUT
㉖ S2 OUT
CK IN (52)
CL OUT (51)
GND 3 ㊿
N.C. ㊾
N.C. ㊽
5V ㊼
VHH ㊻
PG ㊺
H 1 ㊹
H 2 ㊸
GND 2 ㊷
-9V ㊶
VSUB ㊵
V Ø2 ㊴
V Ø1 ㊳
V Ø3 ㊲
V Ø4 ㊱
15V ㉟
N.C. ㉞
5V (A) ㉝
CCD IN ㉜
GND (A) ㉛
MAX GAIN ㉚
AGC CONT ㉙
S AGC CONT ㉘
AGC REF ㉗

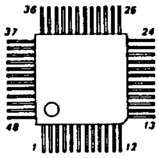
## 4-3. SEMICONDUCTORS

**AN2512S**

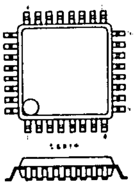


(TOP VIEW)

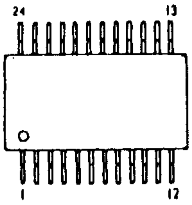
**CXA1072R**
**CXA1338R**
**CXA1339R**
**CXD1204R**
**MC68HC05N4-SC406662**


36
25
37
24
48
13
1
12

**CXD1209Q**

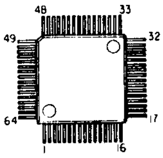


**CXL1503N**
**CXL1504N**

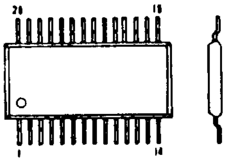


(TOP VIEW)

**MB87485**

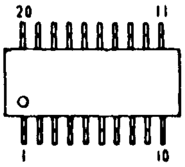

48
33
49
32
64
17
1
16

**MB8464A-15LLPF**



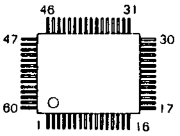
(TOP VIEW)

**MB88341PFV**



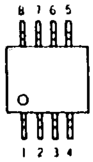
(TOP VIEW)

**MC68HC05C4-SC411573**


46
31
47
30
60
17
1
16

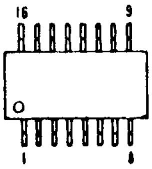
MARKING SIDE VIEW

**RC3414M**



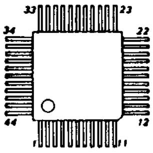
(TOP VIEW)

**TK10500M**

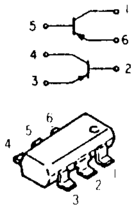


(TOP VIEW)

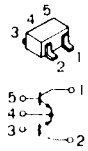
**µPD7508BGB-514**


33
23
34
22
44
12
1

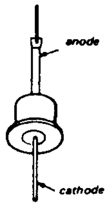
**IMT1US**


5
1
4
6
3
2
6
5
4
1
2
3

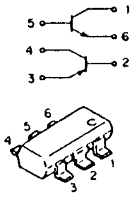
**XN1213**
**XN1501**


5
4
3
2
1
5
1
4
3
2

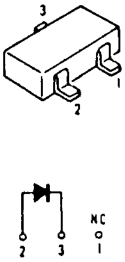
**XN4210**


anode
cathode

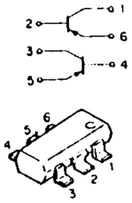
**XN4601**


5
1
6
4
2
3
6
5
4
1
2
3

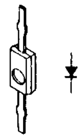
**XN6215**
**XN6501**



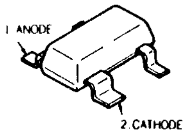
**XN6401**


2
1
6
3
4
5
6
5
4
1
2
3

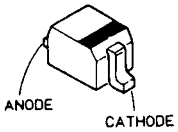
**1T33C01**



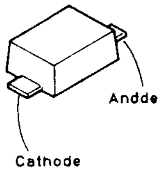
**GL1HD51**


1 ANODE
2 CATHODE

**MA110**
**MA111**


ANODE
CATHODE

**MA8082-M**


Andde
Cathode

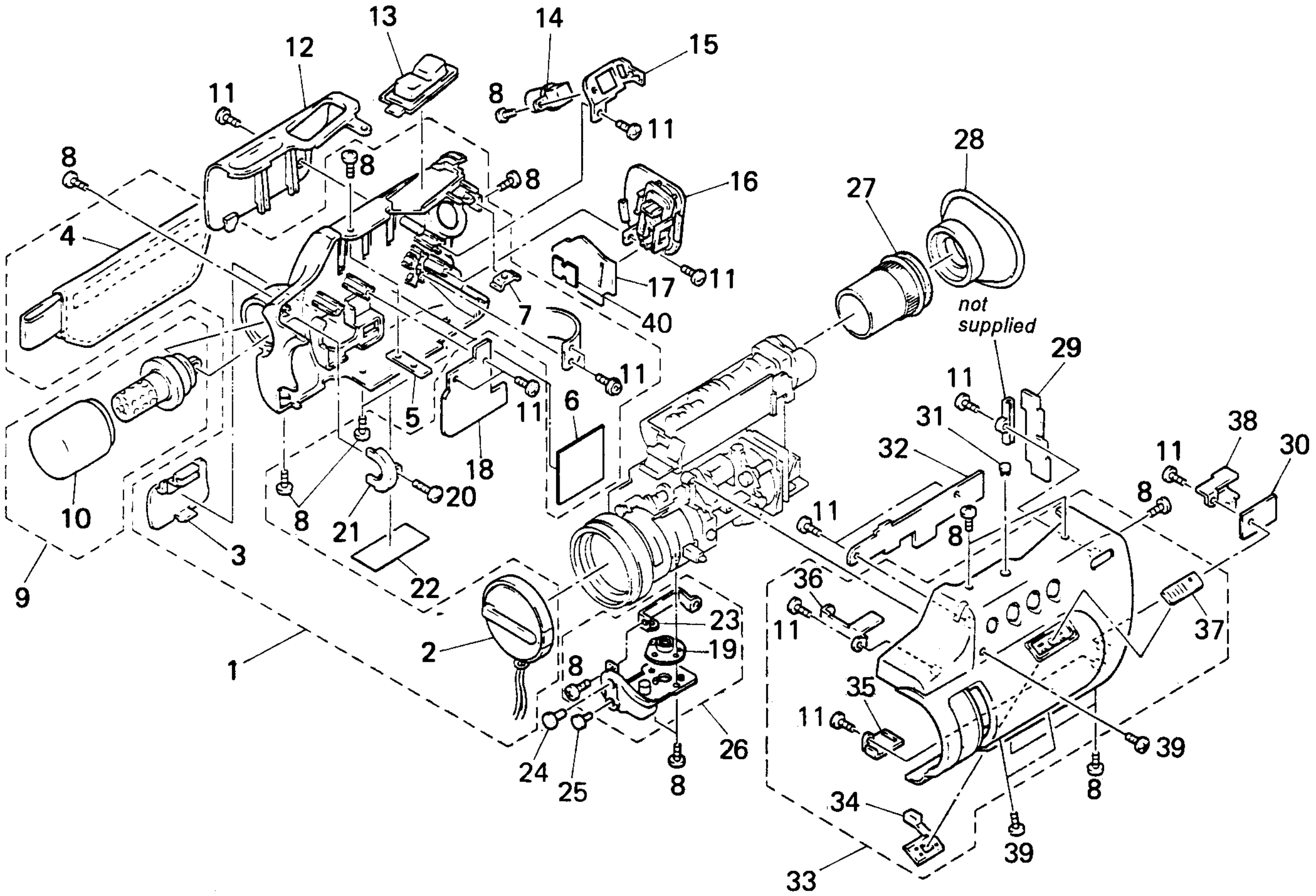
# SECTION 5
# EXPLODED VIEWS

**NOTE:**

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

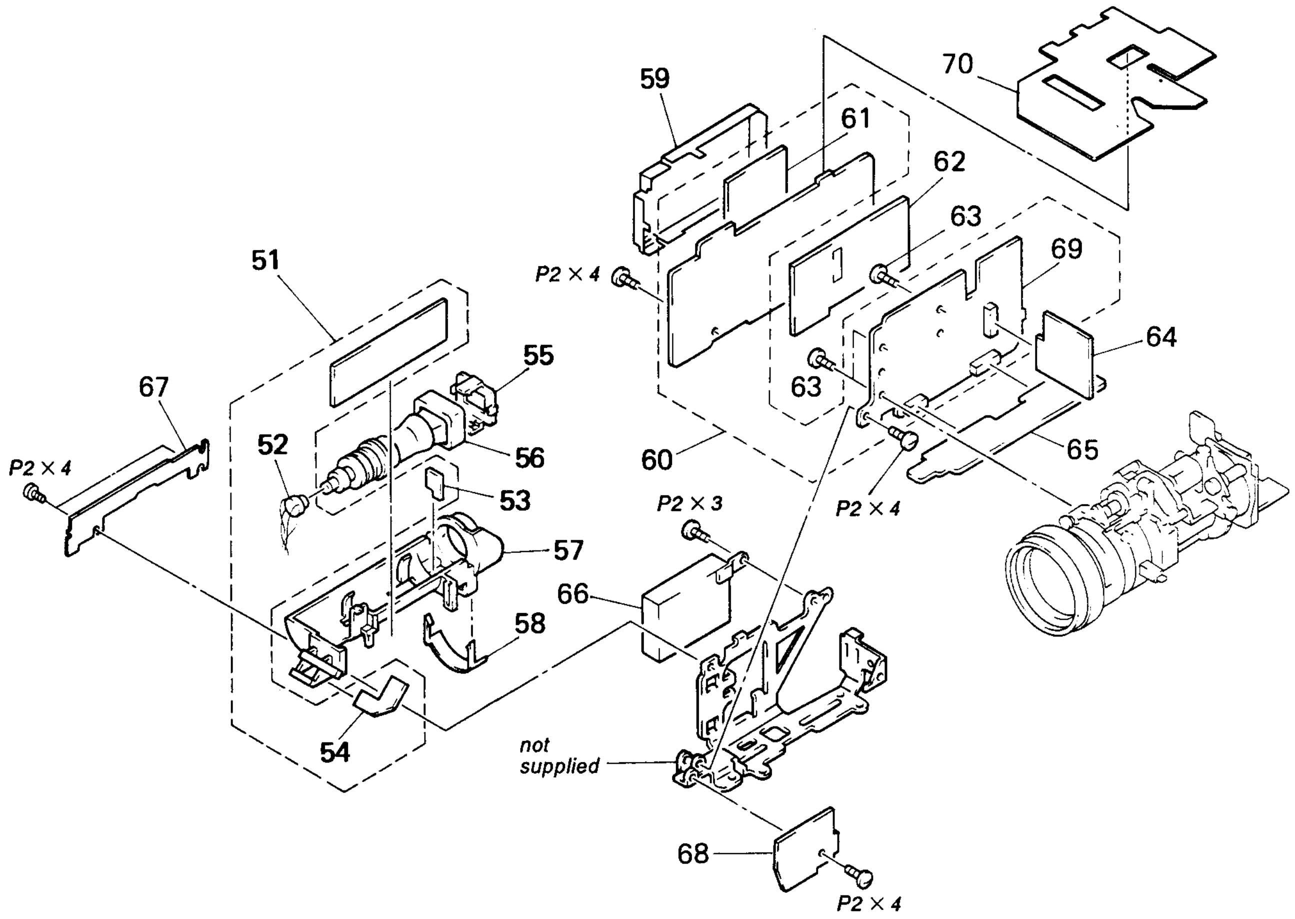
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

## 5-1. CABINET ASSEMBLY



| No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | A-7081-022-A | CABINET (LEFT) BLOCK ASSY | 2-8, 11 |
| 2 | A-7091-015-B | CAP ASSY, LENS | |
| 3 | 3-741-222-01 | COVER, BATTERY | |
| 4 | 3-736-807-01 | BELT, GRIP | |
| 5 | 3-741-211-01 | NUT (D), PLATE | |
| 6 | 3-741-227-03 | LABEL, SERVICE | |
| 7 | 3-741-205-01 | NUT (A), PLATE | |
| 8 | 3-719-381-01 | SCREW (M2X4) | |
| 9 | 1-542-101-21 | MICROPHONE (C-2020A) | 10 |
| 10 | X-2536-712-1 | WIND SCREEN | |
| 11 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 12 | 3-741-226-11 | COVER, ZOOM BUTTON | |
| 13 | 1-572-168-11 | SWITCH, PUSH (ZOOM) (S951) | |
| 14 | 1-575-245-11 | CORD, CONNECTION (PLUG, CONNECTOR 12P) | |
| 15 | *3-741-202-01 | BRACKET, CAMERA CONNECTOR | |
| 16 | X-3741-201-1 | BUTTON ASSY, S/S | |
| 17 | *1-632-926-11 | ST-28 BOARD | |
| 18 | *1-632-927-11 | LI-15 BOARD | |
| 19 | 3-716-454-01 | SCREW, TRIPOD | |
| 20 | 2-370-905-41 | SCREW (B) (2X10), TAPPING | |
| 21 | 3-728-184-01 | HOLDER, MICROPHONE | |
| 22 | *3-741-246-01 | LABEL, MODEL NUMBER (AEP) | |
| 23 | 3-741-237-01 | NUT (L), PLATE | |
| 24 | 3-728-267-01 | COVER, 3.5 JACK (MIC, REMOTE ZOOM) | |
| 25 | 3-728-266-01 | COVER, 2.5 JACK (DC-OUT) | |
| 26 | X-3741-206-1 | CABINET (FRONT) ASSY | 8, 19, 23 |
| 27 | X-3741-203-1 | HOLDER ASSY, FINDER | |
| 28 | 3-733-922-01 | EYE CUP | |
| 29 | *1-632-929-11 | FK-17 BOARD | |
| 30 | *1-632-924-11 | JK-48P BOARD | |
| 31 | 3-741-201-01 | BLIND, VR | |
| 32 | *1-632-928-11 | FK-13 BOARD | |
| 33 | X-3741-207-1 | CABINET (R) ASSY | 11, 34-37 |
| 34 | 3-741-204-01 | BASE, KNOB, AUTO LOCK | |
| 35 | 3-741-210-01 | BRACKET, BELT | |
| 36 | 3-741-238-01 | NUT (Z), PLATE | |
| 37 | 3-741-203-01 | KNOB, AUTO LOCK | |
| 38 | 3-741-239-01 | REINFORCEMENT, JK | |
| 39 | 3-719-408-01 | SCREW (B2), TAPPING, P3 | |
| 40 | *3-741-243-01 | REINFORCEMENT, ST | |

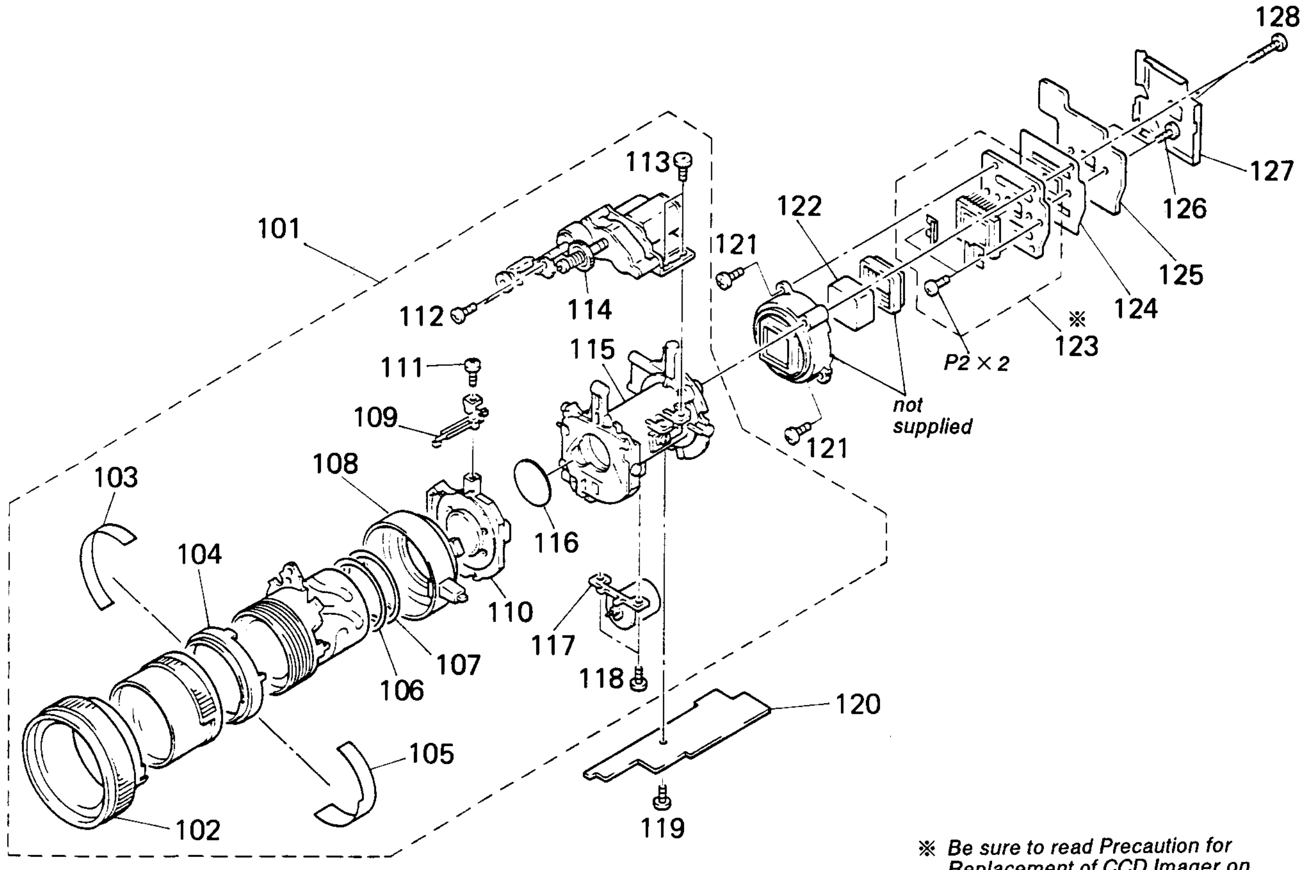
## 5-2. CHASSIS ASSEMBLY



| No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | *A-7062-100-A | VF-15P BOARD, COMPLETE | 52-54 |
| 52 | ⚠.1-540-019-21 | SOCKET ASSY, CRT (W901) | |
| 53 | *1-626-952-22 | TL-23P BOARD | |
| 54 | *1-626-951-21 | TL-22P BOARD | |
| 55 | X-3724-524-1 | COVER ASSY (C), CRT | |
| 56 | ⚠.1-452-482-11 | CRT ASSY (M91JYZ60WB) (V901) | |
| 57 | *3-741-225-01 | FRAME, EVF | |
| 58 | 3-741-234-01 | COVER, EVF | |
| 59 | *3-741-217-01 | CASE (UPPER), SHIELD, VC | |
| 60 | *A-7062-102-A | VC-66P BOARD, COMPLETE | 61, 69 |
| 61 | A-7068-166-A | DT-74D BOARD, COMPLETE (HIC) | |
| 62 | *3-736-320-02 | CASE (LOWER), VC SHIELD | |
| 63 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 64 | *A-7062-104-A | TI-20P BOARD, COMPLETE | |
| 65 | *A-7062-105-A | IN-25 BOARD, COMPLETE | |
| 66 | ⚠.1-466-250-11 | TRANSFORMER UNIT | |
| 67 | *1-633-904-11 | AG-2 BOARD | |
| 68 | *A-7071-091-A | MA-38P BOARD, COMPLETE | |
| 69 | *A-7052-103-A | DI-24P BOARD, COMPLETE | |
| 70 | *3-741-250-01 | PLATE, SHIELD, FCC | |

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

## 5-3. LENS ASSEMBLY


128
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125
124
※ 123
122
121
P2 × 2
not supplied
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113
101
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111
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120
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102
119

※ Be sure to read Precaution for Replacement of CCD Imager on page 67 when replacing the CCD Imager.

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | 1-547-335-31 | LENS, ZOOM (VCL-1106XA) | 102-118 |
| 102 | 3-707-661-01 | RING UNIT, F | |
| 103 | 7-632-701-38 | TAPE, DISTANCE SCALE POSITION | |
| 104 | 3-707-656-01 | RING, (F) SCALE | |
| 105 | 3-707-657-01 | TAPE, DISTANCE SCALE FITTING | |
| 106 | 3-707-744-01 | SPRING | |
| 107 | 3-707-743-01 | WASHER | |
| 108 | 3-707-745-01 | RING ASSY, ZOOM | |
| 109 | 3-707-662-01 | SW ASSY, LEAF (FOCUS END) (S901) | |
| 110 | 3-707-741-01 | ASSY, MIDWAY FRAME | |
| 111 | 3-707-664-01 | SCREW, (B) 2P 1.7X4.5C | |
| 112 | 3-707-666-01 | SCREW, (B) 3P 1.7X2.8C | |
| 113 | 3-707-663-01 | SCREW, FITTING | |
| 114 | 3-707-659-01 | MOTOR ASSY, AF/Z GEAR (FOCUS/ZOOM)(M905) | |
| 115 | 3-707-742-01 | ASSY, REAR | |
| 116 | 1-547-394-11 | FILTER, OPTICAL (PN-02-02) | |
| 117 | 3-707-660-01 | METER ASSY, EE (IRIS) (M904) | |
| 118 | 3-707-665-01 | SCREW, (B) 3P 1.7X4C | |
| 119 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 120 | *A-7061-883-A | LD-20P BOARD, COMPLETE | |
| 121 | 3-738-519-01 | SCREW (M2X3), +B | |
| 122 | 1-547-393-11 | FILTER BLOCK, OPTICAL (OFB-02-G) | |
| 123 | A-7091-132-A | CCD IMAGER ASSY (ICX027BK-1) (IC901) | |
| 124 | *3-725-180-01 | SHEET, INSULATING, CCD HOLDER | |
| 125 | *A-7070-973-A | CD-19P BOARD, COMPLETE | |
| 126 | 3-713-786-51 | SCREW (M2X3) | |
| 127 | *3-741-216-01 | CASE, SHIELD, CCD | |
| 128 | 3-335-640-51 | SCREW (M2X16) | |

# SECTION 6
# ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *A-7061-883-A | LD-20P BOARD, COMPLETE<br>*********************** | |
| | | CAPACITOR | |
| C701 | 1-135-155-21 | TANTAL. CHIP 4.7MF 20% 16V | |
| C702 | 1-162-974-11 | CERAMIC CHIP 0.01MF 50V | |
| C703 | 1-164-227-11 | CERAMIC CHIP 0.022MF 10% 25V | |
| C704 | 1-135-157-21 | TANTAL. CHIP 10MF 20% 6.3V | |
| C705 | 1-162-970-11 | CERAMIC CHIP 0.01MF 10% 25V | |
| C707 | 1-162-970-11 | CERAMIC CHIP 0.01MF 10% 25V | |
| C708 | 1-162-970-11 | CERAMIC CHIP 0.01MF 10% 25V | |
| C709 | 1-162-970-11 | CERAMIC CHIP 0.01MF 10% 25V | |
| C710 | 1-135-160-21 | TANTAL. CHIP 15MF 20% 16V | |
| C711 | 1-162-974-11 | CERAMIC CHIP 0.01MF 50V | |
| C712 | 1-162-638-11 | CERAMIC CHIP 1MF 16V | |
| C713 | 1-162-964-11 | CERAMIC CHIP 0.001MF 10% 50V | |
| C714 | 1-162-637-11 | CERAMIC CHIP 0.47MF 16V | |
| C715 | 1-164-156-11 | CERAMIC CHIP 0.1MF 25V | |
| C716 | 1-164-156-11 | CERAMIC CHIP 0.1MF 25V | |
| C717 | 1-162-970-11 | CERAMIC CHIP 0.01MF 10% 25V | |
| C718 | 1-162-966-11 | CERAMIC CHIP 0.0022MF 10% 50V | |
| C719 | 1-162-966-11 | CERAMIC CHIP 0.0022MF 10% 50V | |
| C720 | 1-164-156-11 | CERAMIC CHIP 0.1MF 25V | |
| C721 | 1-162-968-11 | CERAMIC CHIP 0.0047MF 10% 50V | |
| | | CONNECTOR | |
| CN701 | 1-568-336-11 | CONNECTOR, BOARD TO BOARD 20P | |
| CN702 | 1-566-540-11 | CONNECTOR, FPC (NON ZIF) 8P | |
| CN703 | *1-565-543-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| CN704 | *1-565-542-21 | PIN, CONNECTOR (PC BOARD) 3P | |
| CN705 | *1-565-542-11 | PIN, CONNECTOR (PC BOARD) 3P | |
| | | DIODE | |
| D701 | 8-719-404-46 | DIODE MA110 | |
| | | IC | |
| IC701 | 8-759-500-11 | IC MM1036XFF | |
| IC702 | 8-759-100-94 | IC UPC358G2 | |
| IC703 | 8-759-030-35 | IC MPC1725M | |
| IC704 | 8-759-981-82 | IC RC3414M | |
| | | COIL | |
| L701 | 1-410-381-11 | INDUCTOR CHIP 10UH | |
| | | IC LINK | |
| PS701⚠ | 1-532-605-00 | LINK, IC | |
| | | TRANSISTOR | |
| Q701 | 8-729-402-78 | TRANSISTOR XN6401 | |
| Q702 | 8-729-907-00 | TRANSISTOR DTC114EU | |
| Q703 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q704 | 8-729-402-78 | TRANSISTOR XN6401 | |
| Q705 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q706 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q707 | 8-729-905-15 | TRANSISTOR DTC144WU | |
| Q708 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q709 | 8-729-402-84 | TRANSISTOR XN4601 | |
| | | RESISTOR | |
| R701 | 1-216-298-00 | METAL GLAZE 2.2 5% 1/10W | |
| R702 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R703 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R704 | 1-216-839-11 | METAL GLAZE 33K 5% 1/16W | |
| R705 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R706 | 1-216-835-11 | METAL GLAZE 15K 5% 1/16W | |
| R707 | 1-216-835-11 | METAL GLAZE 15K 5% 1/16W | |
| R708 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R709 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R710 | 1-216-298-00 | METAL GLAZE 2.2 5% 1/10W | |
| R711 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R712 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R713 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R714 | 1-216-843-11 | METAL GLAZE 68K 5% 1/16W | |
| R715 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R717 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R718 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R719 | 1-216-309-00 | METAL GLAZE 5.6 5% 1/10W | |
| R720 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R721 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R722 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R723 | 1-216-842-11 | METAL GLAZE 56K 5% 1/16W | |
| R724 | 1-216-809-11 | METAL GLAZE 100 5% 1/16W | |
| R725 | 1-216-857-11 | METAL GLAZE 1M 5% 1/16W | |
| R726 | 1-216-857-11 | METAL GLAZE 1M 5% 1/16W | |
| R730 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R731 | 1-216-823-11 | METAL GLAZE 1.5K 5% 1/16W | |
| R732 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R733 | 1-216-826-11 | METAL GLAZE 2.7K 5% 1/16W | |
| R734 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R739 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R740 | 1-216-839-11 | METAL GLAZE 33K 5% 1/16W | |
| R741 | 1-216-830-11 | METAL GLAZE 5.6K 5% 1/16W | |
| R742 | 1-216-830-11 | METAL GLAZE 5.6K 5% 1/16W | |
| | | NETWORK RESISTOR | |
| RB701 | 1-236-424-11 | NETWORK, RES 10K | |
| | | VARIABLE RESISTOR | |
| RV701 | 1-238-094-11 | RES, ADJ CERMET 220K | |
| | | FLEXIBLE BOARD | |
| W701 | 1-630-595-11 | FP-187 FLEXIBLE BOARD | |

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**VF-15P** **TL-22P** **TL-23P**

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | *A-7062-100-A | VF-15P BOARD, COMPLETE | | | | |

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### CAPACITOR

| | | | | | |
|---|---|---|---|---|---|
| C901 | 1-124-442-00 | ELECT | 330MF | 20% | 6.3V |
| C903 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C904 | 1-126-160-11 | ELECT | 1MF | 20% | 50V |
| C905 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C906 | 1-131-381-00 | TANTALUM | 47MF | 10% | 6.3V |
| C907 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C908 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V |
| C909 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C910 | 1-124-587-11 | ELECT | 220MF | 20% | 6.3V |
| C911 | 1-163-205-00 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C912 | ⚠1-162-625-11 | CERAMIC CHIP | 0.0047MF | 5% | 50V |
| C913 | ⚠1-162-625-11 | CERAMIC CHIP | 0.0047MF | 5% | 50V |
| C914 | ⚠1-163-209-00 | CERAMIC CHIP | 0.0015MF | 5% | 50V |
| C915 | 1-126-090-11 | ELECT | 82MF | 20% | 10V |
| C916 | 1-126-094-11 | ELECT | 4.7MF | 20% | 35V |
| C918 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C919 | 1-102-038-00 | CERAMIC | 0.001MF | | 500V |

### CONNECTOR

| | | |
|---|---|---|
| CN902 | *1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P |
| CN903 | *1-566-195-21 | PIN, CONNECTOR (PC BOARD) 2P |

### DIODE

| | | |
|---|---|---|
| D903 | 8-719-400-20 | DIODE MA152WA |

### IC

| | | |
|---|---|---|
| IC901 | 8-759-420-01 | IC AN2512S |

### COIL

| | | | |
|---|---|---|---|
| L901 | 1-410-831-21 | INDUCTOR | 82UH |
| L902 | 1-408-976-21 | INDUCTOR | 33UH |
| L903 | ⚠1-459-858-11 | COIL, FERRITE (HLC) | |

### TRANSISTOR

| | | |
|---|---|---|
| Q903 | 8-729-216-32 | TRANSISTOR 2SA1163G |
| Q904 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q905 | 8-729-106-68 | TRANSISTOR 2SD1615A-GP |

### RESISTOR

| | | | | | |
|---|---|---|---|---|---|
| R903 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W |
| R905 | 1-216-007-00 | METAL GLAZE | 18 | 5% | 1/10W |
| R906 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W |
| R908 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W |
| R909 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W |
| R910 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W |
| R911 | 1-216-011-00 | METAL GLAZE | 27 | 5% | 1/10W |
| R912 | 1-216-691-11 | METAL CHIP | 47K | 0.50% | 1/10W |
| R913 | 1-216-107-00 | METAL GLAZE | 270K | 1% | 1/10W |
| R914 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W |
| R915 | 1-216-306-11 | METAL GLAZE | 3.9 | 5% | 1/10W |
| R917 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W |
| R918 | 1-216-069-00 | METAL GLAZE | 6.8K | 5% | 1/10W |
| R919 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W |
| R920 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W |
| R921 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W |
| R922 | 1-216-101-00 | METAL GLAZE | 150K | 5% | 1/10W |
| R923 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W |
| R924 | 1-216-131-11 | METAL GLAZE | 2.7M | 5% | 1/10W |
| R925 | 1-216-131-11 | METAL GLAZE | 2.7M | 5% | 1/10W |
| R926 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W |
| R927 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W |
| R928 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W |
| R929 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W |
| R930 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W |
| R931 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W |
| R932 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W |
| R933 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W |

### VARIABLE RESISTOR

| | | |
|---|---|---|
| RV901 | 1-230-873-11 | RES, ADJ, METAL GRAZE 47K |
| RV902 | 1-230-866-11 | RES, ADJ, METAL GRAZE 470 |
| RV904 | 1-228-762-00 | RES, ADJ, METAL GLAZE 1M |

### TRANSFORMER

| | | |
|---|---|---|
| T901 | ⚠1-439-431-21 | TRANSFORMER ASSY, FLYBACK |

### THERMISTOR

| | | |
|---|---|---|
| TH901 | 1-807-938-11 | THERMISTOR |

### CONNECTOR

| | | |
|---|---|---|
| W901 | 1-540-019-21 | SOCKET ASSY, CRT |

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| | | |
|---|---|---|
| | *1-626-951-21 | TL-22P BOARD |

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### DIODE

| | | |
|---|---|---|
| D950 | 8-719-941-34 | LED GL1HD51 |

### RESISTOR

| | | | | | |
|---|---|---|---|---|---|
| R950 | 1-216-037-00 | METAL GLAZE | 330 | 5% | 1/10W |

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| | | |
|---|---|---|
| | *1-626-952-22 | TL-23P BOARD |

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### DIODE

| | | |
|---|---|---|
| D955 | 8-719-941-34 | LED GL1HD51 |

When indicating parts by reference number, please include the board name.

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| | *A-7062-102-A | VC-66P BOARD, COMPLETE | | |
| | | ************************ | | |
| | | (Including DI-24P BOARD) | | |
| | A-7068-166-A | DT-74D BOARD, COMPLETE (HIC) | | |
| | | CAPACITOR | | |
| C102 | 1-135-162-21 | TANTAL. CHIP 33MF | 20% | 6.3V |
| C103 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C104 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C105 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V |
| C107 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C108 | 1-126-205-11 | ELECT CHIP 47MF | 20% | 6.3V |
| C109 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C110 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C111 | 1-162-941-11 | CERAMIC CHIP 10PF | 0.5PF | 50V |
| C131 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C132 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C133 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% | 25V |
| C134 | 1-135-076-21 | TANTAL. CHIP 1MF | 20% | 35V |
| C135 | 1-164-004-11 | CERAMIC CHIP 0.1MF | 10% | 25V |
| C136 | 1-135-079-21 | TANTAL. CHIP 3.3MF | 20% | 35V |
| C137 | 1-135-076-21 | TANTAL. CHIP 1MF | 20% | 35V |
| C145 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C146 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C150 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C151 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C152 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C153 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C154 | 1-162-919-11 | CERAMIC CHIP 22PF | 5% | 50V |
| C158 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C181 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C182 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C183 | 1-162-950-11 | CERAMIC CHIP 56PF | 5% | 50V |
| C184 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C185 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C186 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C187 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C188 | 1-162-945-11 | CERAMIC CHIP 22PF | 5% | 50V |
| C189 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C190 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C191 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C192 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C193 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C194 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C195 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C196 | 1-164-217-11 | CERAMIC CHIP 150PF | 0.25PF | 50V |
| C197 | 1-162-922-11 | CERAMIC CHIP 39PF | 5% | 50V |
| C198 | 1-162-957-11 | CERAMIC CHIP 220PF | 5% | 50V |
| C199 | 1-162-925-11 | CERAMIC CHIP 68PF | 5% | 50V |
| C200 | 1-162-919-11 | CERAMIC CHIP 22PF | 5% | 50V |
| C201 | 1-162-945-11 | CERAMIC CHIP 22PF | 5% | 50V |
| C202 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C203 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C204 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C205 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C206 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C207 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C208 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C209 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C210 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C211 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C212 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C213 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C214 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C215 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C216 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C217 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C219 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C220 | 1-162-638-11 | CERAMIC CHIP 1MF | | 16V |
| C221 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C222 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C223 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C224 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C225 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C227 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C228 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C229 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C230 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C231 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C232 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C233 | 1-162-942-11 | CERAMIC CHIP 12PF | 5% | 50V |
| C234 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C235 | 1-162-638-11 | CERAMIC CHIP 1MF | | 16V |
| C236 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C237 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C238 | 1-162-928-11 | CERAMIC CHIP 120PF | 5% | 50V |
| C239 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C241 | 1-162-956-11 | CERAMIC CHIP 180PF | 5% | 50V |
| C252 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V |
| C253 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C254 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V |
| C255 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V |
| C256 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V |
| C257 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C259 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C260 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C261 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C262 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C263 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C264 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C265 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C266 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C267 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C268 | 1-135-170-21 | TANTAL. CHIP 6.8MF | 20% | 4V |
| C269 | 1-135-170-21 | TANTAL. CHIP 6.8MF | 20% | 4V |

When indicating parts by reference number, please include the board name.

# VC-66P

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C270 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C271 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C272 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C273 | 1-162-953-11 | CERAMIC CHIP 100PF | 5% | 50V |
| C274 | 1-162-955-11 | CERAMIC CHIP 150PF | 5% | 50V |
| C275 | 1-162-946-11 | CERAMIC CHIP 27PF | 5% | 50V |
| C276 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C277 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C278 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C279 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C281 | 1-162-953-11 | CERAMIC CHIP 100PF | 5% | 50V |
| C282 | 1-162-955-11 | CERAMIC CHIP 150PF | 5% | 50V |
| C283 | 1-162-946-11 | CERAMIC CHIP 27PF | 5% | 50V |
| C301 | 1-162-943-11 | CERAMIC CHIP 15PF | 5% | 50V |
| C303 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C304 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C305 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C306 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C307 | 1-162-915-11 | CERAMIC CHIP 10PF | 0.5PF | 50V |
| C308 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V |
| C309 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C310 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V |
| C311 | 1-162-915-11 | CERAMIC CHIP 10PF | 0.5PF | 50V |
| C312 | 1-164-360-11 | CERAMIC CHIP 0.1MF | | 16V |
| C313 | 1-162-921-11 | CERAMIC CHIP 33PF | 5% | 50V |
| C314 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C315 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C316 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C317 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C318 | 1-124-566-11 | ELECT 120MF | 20% | 6.3V |
| C319 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C320 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V |
| C321 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C322 | 1-162-638-11 | CERAMIC CHIP 1MF | | 16V |
| C323 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C324 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C325 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C326 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C327 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C330 | 1-162-962-11 | CERAMIC CHIP 470PF | 10% | 50V |
| C331 | 1-162-926-11 | CERAMIC CHIP 82PF | 5% | 50V |
| C332 | 1-162-919-11 | CERAMIC CHIP 22PF | 5% | 50V |
| C333 | 1-162-916-11 | CERAMIC CHIP 12PF | 5% | 50V |
| C334 | 1-135-161-21 | TANTAL. CHIP 22MF | 20% | 10V |
| C336 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C337 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C338 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V |
| C339 | 1-135-181-21 | TANTAL. CHIP 4.7MF | 20% | 6.3V |
| C340 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C341 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V |
| C350 | 1-135-076-21 | TANTAL. CHIP 1MF | 20% | 35V |
| C351 | 1-135-163-21 | TANTAL. CHIP 47MF | 20% | 4V |
| C380 | 1-163-115-00 | CERAMIC CHIP 82PF | 5% | 50V |
| C404 | 1-162-966-11 | CERAMIC CHIP 0.0022MF | 10% | 50V |
| C406 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V |
| C408 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V |
| C409 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V |
| C415 | 1-162-945-11 | CERAMIC CHIP 22PF | 5% | 50V |
| C416 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V |
| C417 | 1-162-927-11 | CERAMIC CHIP 100PF | 5% | 50V |

## CONNECTOR

| Ref.No | Part No. | Description |
|---|---|---|
| CN302 | 1-568-333-11 | CONNECTOR, BOARD TO BOARD 14P |

## TRIMMER

| Ref.No | Part No. | Description |
|---|---|---|
| CT142 | 1-141-333-11 | CAP, CHIP TRIMMER 30PF |

## DIODE

| Ref.No | Part No. | Description |
|---|---|---|
| D101 | 8-719-404-46 | DIODE MA110 |
| D102 | 8-719-404-46 | DIODE MA110 |
| D131 | 8-719-404-32 | DIODE MA141WA |
| D132 | 8-719-404-46 | DIODE MA110 |
| D133 | 8-719-404-46 | DIODE MA110 |
| D134 | 8-719-404-52 | DIODE MA143 |
| D142 | 8-719-949-48 | DIODE 1T32-2 |
| D301 | 8-719-404-46 | DIODE MA110 |

## FILTER

| Ref.No | Part No. | Description |
|---|---|---|
| FL181 | 1-236-266-11 | FILTER, LOW PASS (YH) |
| FL182 | 1-236-267-11 | FILTER, LOW PASS (YDL) |
| FL301 | 1-236-192-11 | FILTER, LOW PASS |
| FL303 | 1-415-695-11 | DL, LC |
| FL304 | 1-236-265-11 | FILTER, BAND PASS |

## IC

| Ref.No | Part No. | Description |
|---|---|---|
| IC141 | 8-752-329-55 | IC CXD1209Q |
| IC181 | 8-752-034-17 | IC CXA1338R |
| IC182 | 8-752-330-15 | IC CXL1503N |
| IC183 | 8-752-331-32 | IC CXL1504N |
| IC251 | 8-752-034-21 | IC CXA1339R |
| IC252 | 8-759-946-00 | IC MB88341PFV |
| IC253 | 8-752-032-48 | IC CXA1157M |
| IC301 | 8-752-033-34 | IC CXA1072R |
| IC302 | 8-759-946-00 | IC MB88341PFV |
| IC303 | 8-759-101-12 | IC UPC311G2-E1 |

## COIL

| Ref.No | Part No. | Description |
|---|---|---|
| L101 | 1-412-031-11 | INDUCTOR CHIP 47UH |
| L102 | 1-412-029-11 | INDUCTOR CHIP 10UH |
| L142 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L143 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L181 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L182 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L183 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L251 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L301 | 1-410-381-11 | INDUCTOR CHIP 10UH |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L302 | 1-410-657-21 | INDUCTOR CHIP 180UH | |
| L303 | 1-410-204-31 | INDUCTOR CHIP 10UH | |
| L402 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L403 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L404 | 1-410-192-51 | INDUCTOR CHIP 1UH | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q101 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q102 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q103 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q104 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q105 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q106 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q107 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q131 | 8-729-421-23 | TRANSISTOR XN1501 | |
| Q132 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q133 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q134 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q141 | 8-729-117-72 | TRANSISTOR 2SC4178 | |
| Q142 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q181 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q182 | 8-729-402-78 | TRANSISTOR XN6401 | |
| Q183 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q184 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q185 | 8-729-421-23 | TRANSISTOR XN1501 | |
| Q186 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q187 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q188 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q189 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q190 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q191 | 8-729-402-78 | TRANSISTOR XN6401 | |
| Q192 | 8-729-402-78 | TRANSISTOR XN6401 | |
| Q193 | 8-729-402-78 | TRANSISTOR XN6401 | |
| Q194 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q195 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q196 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q254 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q255 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q256 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q257 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q303 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q304 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q305 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q306 | 8-729-402-84 | TRANSISTOR XN4601 | |
| Q307 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q308 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q309 | 8-729-905-23 | TRANSISTOR 2SA1576 | |
| Q310 | 8-729-402-78 | TRANSISTOR XN6401 | |
| Q311 | 8-729-402-19 | TRANSISTOR XN6501 | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R101 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R102 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R103 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R104 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R105 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R107 | 1-216-820-11 | METAL GLAZE 820 5% 1/16W | |
| R108 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R109 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R111 | 1-216-822-11 | METAL GLAZE 1.2K 5% 1/16W | |
| R112 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R113 | 1-216-832-11 | METAL GLAZE 8.2K 5% 1/16W | |
| R114 | 1-216-068-00 | METAL GLAZE 6.2K 5% 1/10W | |
| R115 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R116 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R117 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R118 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R119 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R120 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R121 | 1-216-842-11 | METAL GLAZE 56K 5% 1/16W | |
| R122 | 1-216-843-11 | METAL GLAZE 68K 5% 1/16W | |
| R123 | 1-216-832-11 | METAL GLAZE 8.2K 5% 1/16W | |
| R124 | 1-216-827-11 | METAL GLAZE 3.3K 5% 1/16W | |
| R125 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R126 | 1-216-809-11 | METAL GLAZE 100 5% 1/16W | |
| R127 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R128 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R129 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R131 | 1-216-836-11 | METAL GLAZE 18K 5% 1/16W | |
| R132 | 1-216-844-11 | METAL GLAZE 82K 5% 1/16W | |
| R133 | 1-216-844-11 | METAL GLAZE 82K 5% 1/16W | |
| R134 | 1-216-850-11 | METAL GLAZE 270K 5% 1/16W | |
| R135 | 1-216-830-11 | METAL GLAZE 5.6K 5% 1/16W | |
| R136 | 1-216-835-11 | METAL GLAZE 15K 5% 1/16W | |
| R137 | 1-216-857-11 | METAL GLAZE 1M 5% 1/16W | |
| R138 | 1-216-844-11 | METAL GLAZE 82K 5% 1/16W | |
| R139 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R140 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R145 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R147 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R148 | 1-216-809-11 | METAL GLAZE 100 5% 1/16W | |
| R149 | 1-216-843-11 | METAL GLAZE 68K 5% 1/16W | |
| R150 | 1-216-857-11 | METAL GLAZE 1M 5% 1/16W | |
| R151 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R152 | 1-216-845-11 | METAL GLAZE 100K 5% 1/16W | |
| R153 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R154 | 1-216-809-11 | METAL GLAZE 100 5% 1/16W | |
| R155 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R156 | 1-216-823-11 | METAL GLAZE 1.5K 5% 1/16W | |
| R160 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R162 | 1-216-845-11 | METAL GLAZE 100K 5% 1/16W | |
| R163 | 1-216-811-11 | METAL GLAZE 150 5% 1/16W | |
| R165 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R166 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R181 | 1-216-072-00 | METAL GLAZE 9.1K 5% 1/10W | |
| R182 | 1-216-822-11 | METAL GLAZE 1.2K 5% 1/16W | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R183 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R184 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R185 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R186 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R187 | 1-216-824-11 | METAL GLAZE 1.8K 5% 1/16W | |
| R188 | 1-216-812-11 | METAL GLAZE 180 5% 1/16W | |
| R189 | 1-216-820-11 | METAL GLAZE 820 5% 1/16W | |
| R190 | 1-216-824-11 | METAL GLAZE 1.8K 5% 1/16W | |
| R192 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R193 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R194 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R195 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R196 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R197 | 1-216-839-11 | METAL GLAZE 33K 5% 1/16W | |
| R198 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R199 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R200 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R201 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R202 | 1-216-823-11 | METAL GLAZE 1.5K 5% 1/16W | |
| R203 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R204 | 1-216-836-11 | METAL GLAZE 18K 5% 1/16W | |
| R205 | 1-216-839-11 | METAL GLAZE 33K 5% 1/16W | |
| R206 | 1-216-839-11 | METAL GLAZE 33K 5% 1/16W | |
| R207 | 1-216-839-11 | METAL GLAZE 33K 5% 1/16W | |
| R208 | 1-216-842-11 | METAL GLAZE 56K 5% 1/16W | |
| R209 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R210 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R211 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R212 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R213 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R214 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R215 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R218 | 1-216-994-11 | METAL GLAZE 13K 5% 1/16W | |
| R219 | 1-216-836-11 | METAL GLAZE 18K 5% 1/16W | |
| R220 | 1-216-835-11 | METAL GLAZE 15K 5% 1/16W | |
| R221 | 1-216-834-11 | METAL GLAZE 12K 5% 1/16W | |
| R222 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R223 | 1-216-857-11 | METAL GLAZE 1M 5% 1/16W | |
| R224 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R225 | 1-216-832-11 | METAL GLAZE 8.2K 5% 1/16W | |
| R226 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R227 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R229 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R230 | 1-216-817-11 | METAL GLAZE 470 5% 1/16W | |
| R231 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R233 | 1-216-824-11 | METAL GLAZE 1.8K 5% 1/16W | |
| R252 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R259 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R265 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R266 | 1-216-836-11 | METAL GLAZE 18K 5% 1/16W | |
| R268 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R269 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R270 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R271 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R272 | 1-216-827-11 | METAL GLAZE 3.3K 5% 1/16W | |
| R273 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R274 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R275 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R276 | 1-216-824-11 | METAL GLAZE 1.8K 5% 1/16W | |
| R277 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R278 | 1-216-824-11 | METAL GLAZE 1.8K 5% 1/16W | |
| R279 | 1-216-838-11 | METAL GLAZE 27K 5% 1/16W | |
| R280 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R281 | 1-216-835-11 | METAL GLAZE 15K 5% 1/16W | |
| R282 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R283 | 1-216-832-11 | METAL GLAZE 8.2K 5% 1/16W | |
| R284 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R285 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R301 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R302 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R303 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R305 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R309 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R310 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R314 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R315 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R319 | 1-216-838-11 | METAL GLAZE 27K 5% 1/16W | |
| R320 | 1-216-839-11 | METAL GLAZE 33K 5% 1/16W | |
| R322 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R323 | 1-216-830-11 | METAL GLAZE 5.6K 5% 1/16W | |
| R324 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |
| R325 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R326 | 1-216-840-11 | METAL GLAZE 39K 5% 1/16W | |
| R327 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R328 | 1-216-817-11 | METAL GLAZE 470 5% 1/16W | |
| R329 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R330 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R331 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R332 | 1-216-824-11 | METAL GLAZE 1.8K 5% 1/16W | |
| R333 | 1-216-827-11 | METAL GLAZE 3.3K 5% 1/16W | |
| R334 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R335 | 1-216-829-11 | METAL GLAZE 4.7K 5% 1/16W | |
| R336 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R337 | 1-216-071-00 | METAL GLAZE 8.2K 5% 1/10W | |
| R341 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R342 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R343 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R344 | 1-216-842-11 | METAL GLAZE 56K 5% 1/16W | |
| R345 | 1-216-842-11 | METAL GLAZE 56K 5% 1/16W | |
| R346 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R347 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R348 | 1-216-841-11 | METAL GLAZE 47K 5% 1/16W | |
| R349 | 1-216-827-11 | METAL GLAZE 3.3K 5% 1/16W | |
| R350 | 1-216-845-11 | METAL GLAZE 100K 5% 1/16W | |
| R351 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R352 | 1-216-835-11 | METAL GLAZE 15K 5% 1/16W | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R353 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R354 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R355 | 1-216-822-11 | METAL GLAZE | 1.2K | 5% | 1/16W | |
| R356 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R357 | 1-216-838-11 | METAL GLAZE | 27K | 5% | 1/16W | |
| R358 | 1-216-837-11 | METAL GLAZE | 22K | 5% | 1/16W | |
| R359 | 1-216-826-11 | METAL GLAZE | 2.7K | 5% | 1/16W | |
| R360 | 1-216-827-11 | METAL GLAZE | 3.3K | 5% | 1/16W | |
| R361 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R362 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R401 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R402 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R403 | 1-216-827-11 | METAL GLAZE | 3.3K | 5% | 1/16W | |
| R404 | 1-216-843-11 | METAL GLAZE | 68K | 5% | 1/16W | |
| R405 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R406 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R407 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R408 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R409 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R410 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R411 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R413 | 1-216-813-11 | METAL GLAZE | 220 | 5% | 1/16W | |
| R415 | 1-216-813-11 | METAL GLAZE | 220 | 5% | 1/16W | |
| R416 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R417 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R418 | 1-216-813-11 | METAL GLAZE | 220 | 5% | 1/16W | |
| R419 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R420 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R422 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R423 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R424 | 1-216-830-11 | METAL GLAZE | 5.6K | 5% | 1/16W | |
| R425 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R426 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R427 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R428 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R429 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R430 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R431 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R433 | 1-216-813-11 | METAL GLAZE | 220 | 5% | 1/16W | |
| R434 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R435 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R436 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R437 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R438 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R439 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R441 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R442 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R443 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |

NETWORK RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RB101 | 1-236-436-11 | NETWORK, RES 100K | |
| RB141 | 1-236-416-11 | NETWORK, RES 2.2K | |
| RB181 | 1-236-414-11 | NETWORK, RES 1.5K | |
| RB182 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB183 | 1-236-423-11 | NETWORK, RES 8.2K | |
| RB184 | 1-236-423-11 | NETWORK, RES 8.2K | |
| RB251 | 1-236-428-11 | NETWORK, RES 22K | |
| RB252 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB253 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB301 | 1-236-412-11 | NETWORK, RES 1.0K | |

CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X101 | 1-577-119-11 | OSCILLATOR, CRYSTAL | |
| X141 | 1-567-733-11 | VIBRATOR, CRYSTAL (17MHz) | |

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*A-7052-103-A DI-24P BOARD, COMPLETE
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CAPACITOR

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C362 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |
| C363 | 1-135-181-21 | TANTAL. CHIP 4.7MF | 20% | 6.3V | |
| C364 | 1-135-181-21 | TANTAL. CHIP 4.7MF | 20% | 6.3V | |
| C365 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |
| C366 | 1-135-180-21 | TANTAL. CHIP 3.3MF | 20% | 6.3V | |
| C367 | 1-135-180-21 | TANTAL. CHIP 3.3MF | 20% | 6.3V | |
| C368 | 1-135-180-21 | TANTAL. CHIP 3.3MF | 20% | 6.3V | |
| C369 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V | |
| C370 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |
| C371 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V | |
| C372 | 1-135-072-21 | TANTAL. CHIP 0.22MF | 20% | 35V | |
| C373 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C374 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |
| C379 | 1-135-145-11 | TANTAL. CHIP 0.47MF | 20% | 35V | |
| C561 | 1-162-921-11 | CERAMIC CHIP 33PF | 5% | 50V | |
| C562 | 1-162-916-11 | CERAMIC CHIP 12PF | 5% | 50V | |
| C563 | 1-162-638-11 | CERAMIC CHIP 1MF | | 16V | |
| C565 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V | |
| C566 | 1-135-149-21 | TANTAL. CHIP 2.2MF | 20% | 6.3V | |
| C567 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C569 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C570 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V | |
| C571 | 1-164-227-11 | CERAMIC CHIP 0.022MF | 10% | 25V | |
| C572 | 1-162-927-11 | CERAMIC CHIP 100PF | 5% | 50V | |
| C611 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V | |
| C612 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V | |
| C613 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V | |
| C614 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C616 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C617 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V | |
| C618 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C619 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V | |
| C620 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C621 | 1-162-941-11 | CERAMIC CHIP 10PF | 0.5PF | 50V | |
| C622 | 1-162-974-11 | CERAMIC CHIP 0.01MF | | 50V | |

When indicating parts by reference number, please include the board name.

# DI-24P

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C623 | 1-162-957-11 | CERAMIC CHIP 220PF | 5% | 50V |
| C624 | 1-162-957-11 | CERAMIC CHIP 220PF | 5% | 50V |
| C625 | 1-162-928-11 | CERAMIC CHIP 120PF | 5% | 50V |
| C626 | 1-162-926-11 | CERAMIC CHIP 82PF | 5% | 50V |
| C627 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C628 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C629 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C631 | 1-162-966-11 | CERAMIC CHIP 0.0022MF | 10% | 50V |
| C632 | 1-135-180-21 | TANTAL. CHIP 3.3MF | 20% | 6.3V |
| C633 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C634 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C636 | 1-162-637-11 | CERAMIC CHIP 0.47MF | | 16V |
| C637 | 1-135-180-21 | TANTAL. CHIP 3.3MF | 20% | 6.3V |
| C638 | 1-135-177-21 | TANTAL. CHIP 1MF | 20% | 20V |
| C639 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C640 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C641 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C642 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V |
| C643 | 1-162-957-11 | CERAMIC CHIP 220PF | 5% | 50V |
| C644 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C647 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V |
| C648 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V |

### CONNECTOR

| | | |
|---|---|---|
| CN802 | 1-568-336-11 | CONNECTOR, BOARD TO BOARD 20P |
| CN803 | 1-568-336-11 | CONNECTOR, BOARD TO BOARD 20P |
| CN804 | 1-568-333-11 | CONNECTOR, BOARD TO BOARD 14P |
| CN805 | 1-568-359-41 | CONNECTOR, BOARD TO BOARD 20P |

### TRIMMER

| | | |
|---|---|---|
| CT561 | 1-141-368-11 | CAP, CHIP TRIMMER 30PF |

### DIODE

| | | |
|---|---|---|
| D361 | 8-719-404-32 | DIODE MA141WA |
| D362 | 8-719-404-46 | DIODE MA110 |
| D561 | 8-719-404-49 | DIODE MA111 |
| D562 | 8-719-420-51 | DIODE MA729 |
| D563 | 8-719-404-46 | DIODE MA110 |
| D566 | 8-719-420-51 | DIODE MA729 |
| D610 | 8-719-404-46 | DIODE MA110 |

### FILTER

| | | |
|---|---|---|
| FL610 | 1-236-209-11 | FILTER, LOW PASS |

### IC

| | | |
|---|---|---|
| IC361 | 8-759-032-00 | IC MC68HC05N4-SC406662 |
| IC362 | 8-759-937-56 | IC S-8054ALB-LM-S |
| IC363 | 8-759-106-23 | IC UPD4066BG |
| IC364 | 8-759-100-95 | IC UPC324G2 |
| IC561 | 8-759-148-21 | IC UPD7508BGB-514 |
| IC610 | 8-752-329-47 | IC CXD1172M |
| IC611 | 8-759-946-00 | IC MB88341PFV |
| IC612 | 8-752-326-18 | IC CXD1204R |
| IC613 | 8-759-036-12 | IC MC68HC05C4-SC411573 |
| IC614 | 8-759-940-45 | IC S-8054HN-CB |
| IC615 | 8-759-100-94 | IC UPC358G2 |

### COIL

| | | |
|---|---|---|
| L361 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L362 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L561 | 1-410-369-11 | INDUCTOR CHIP 1UH |
| L610 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L611 | 1-410-381-11 | INDUCTOR CHIP 10UH |
| L612 | 1-410-655-31 | INDUCTOR CHIP 120UH |

### TRANSISTOR

| | | |
|---|---|---|
| Q361 | 8-729-403-07 | TRANSISTOR XN1213 |
| Q362 | 8-729-403-10 | TRANSISTOR XN6215 |
| Q363 | 8-729-905-35 | TRANSISTOR 2SC4081 |
| Q364 | 8-729-403-10 | TRANSISTOR XN6215 |
| Q365 | 8-729-402-78 | TRANSISTOR XN6401 |
| Q367 | 8-729-905-35 | TRANSISTOR 2SC4081 |
| Q368 | 8-729-403-10 | TRANSISTOR XN6215 |
| Q561 | 8-729-905-23 | TRANSISTOR 2SA1576 |
| Q562 | 8-729-403-24 | TRANSISTOR XN4210 |
| Q563 | 8-729-905-18 | TRANSISTOR DTC144EU |
| Q564 | 8-729-921-08 | TRANSISTOR DTC144TU |
| Q565 | 8-729-402-78 | TRANSISTOR XN6401 |
| Q566 | 8-729-402-19 | TRANSISTOR XN6501 |
| Q567 | 8-729-402-78 | TRANSISTOR XN6401 |
| Q568 | 8-729-109-44 | TRANSISTOR 2SK94 |
| Q569 | 8-729-905-23 | TRANSISTOR 2SA1576 |
| Q570 | 8-729-905-15 | TRANSISTOR DTC144WU |
| Q571 | 8-729-920-39 | TRANSISTOR IMT1US |
| Q572 | 8-729-805-25 | TRANSISTOR 2SB1121 |
| Q573 | 8-729-905-18 | TRANSISTOR DTC144EU |
| Q574 | 8-729-905-23 | TRANSISTOR 2SA1576 |
| Q610 | 8-729-403-10 | TRANSISTOR XN6215 |
| Q611 | 8-729-402-84 | TRANSISTOR XN4601 |
| Q613 | 8-729-905-35 | TRANSISTOR 2SC4081 |
| Q614 | 8-729-905-35 | TRANSISTOR 2SC4081 |
| Q619 | 8-729-905-35 | TRANSISTOR 2SC4081 |
| Q620 | 8-729-905-35 | TRANSISTOR 2SC4081 |
| Q621 | 8-729-402-19 | TRANSISTOR XN6501 |

### RESISTOR

| | | | | | |
|---|---|---|---|---|---|
| R338 | 1-216-838-11 | METAL GLAZE | 27K | 5% | 1/16W |
| R339 | 1-216-831-11 | METAL GLAZE | 6.8K | 5% | 1/16W |
| R364 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W |
| R365 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W |
| R366 | 1-216-857-11 | METAL GLAZE | 1M | 5% | 1/16W |
| R367 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W |
| R368 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W |
| R369 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W |
| R370 | 1-216-837-11 | METAL GLAZE | 22K | 5% | 1/16W |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R371 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R372 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R373 | 1-216-823-11 | METAL GLAZE | 1.5K | 5% | 1/16W | |
| R374 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R375 | 1-216-840-11 | METAL GLAZE | 39K | 5% | 1/16W | |
| R376 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R377 | 1-216-847-11 | METAL GLAZE | 150K | 5% | 1/16W | |
| R378 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R382 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R383 | 1-216-829-11 | METAL GLAZE | 4.7K | 5% | 1/16W | |
| R384 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R385 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R386 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R387 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R561 | 1-216-849-11 | METAL GLAZE | 220K | 5% | 1/16W | |
| R562 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R563 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R564 | 1-216-851-11 | METAL GLAZE | 330K | 5% | 1/16W | |
| R566 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R567 | 1-216-857-11 | METAL GLAZE | 1M | 5% | 1/16W | |
| R568 | 1-216-097-00 | METAL GLAZE | 100K | 1% | 1/10W | |
| R569 | 1-216-852-11 | METAL GLAZE | 390K | 5% | 1/16W | |
| R570 | 1-216-857-11 | METAL GLAZE | 1M | 5% | 1/16W | |
| R571 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R572 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R573 | 1-216-851-11 | METAL GLAZE | 330K | 5% | 1/16W | |
| R574 | 1-216-809-11 | METAL GLAZE | 100 | 5% | 1/16W | |
| R575 | 1-216-861-11 | METAL GLAZE | 2.2M | 5% | 1/16W | |
| R576 | 1-216-839-11 | METAL GLAZE | 33K | 5% | 1/16W | |
| R577 | 1-216-843-11 | METAL GLAZE | 68K | 5% | 1/16W | |
| R578 | 1-216-136-00 | METAL GLAZE | 2.7 | 5% | 1/8W | |
| R579 | 1-216-828-11 | METAL GLAZE | 3.9K | 5% | 1/16W | |
| R580 | 1-216-822-11 | METAL GLAZE | 1.2K | 5% | 1/16W | |
| R581 | 1-216-831-11 | METAL GLAZE | 6.8K | 5% | 1/16W | |
| R582 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R583 | 1-218-172-11 | METAL GLAZE | 680K | 1% | 1/10W | |
| R584 | 1-218-172-11 | METAL GLAZE | 680K | 1% | 1/10W | |
| R585 | 1-216-836-11 | METAL GLAZE | 18K | 5% | 1/16W | |
| R587 | 1-216-807-11 | METAL GLAZE | 68 | 5% | 1/16W | |
| R589 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R611 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R613 | 1-216-830-11 | METAL GLAZE | 5.6K | 5% | 1/16W | |
| R614 | 1-216-840-11 | METAL GLAZE | 39K | 5% | 1/16W | |
| R615 | 1-216-830-11 | METAL GLAZE | 5.6K | 5% | 1/16W | |
| R616 | 1-216-831-11 | METAL GLAZE | 6.8K | 5% | 1/16W | |
| R617 | 1-216-864-11 | METAL GLAZE | 0 | 5% | 1/16W | |
| R618 | 1-216-829-11 | METAL GLAZE | 4.7K | 5% | 1/16W | |
| R619 | 1-216-857-11 | METAL GLAZE | 1M | 5% | 1/16W | |
| R620 | 1-216-843-11 | METAL GLAZE | 68K | 5% | 1/16W | |
| R621 | 1-216-857-11 | METAL GLAZE | 1M | 5% | 1/16W | |
| R622 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R623 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R624 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R625 | 1-216-838-11 | METAL GLAZE | 27K | 5% | 1/16W | |
| R626 | 1-216-842-11 | METAL GLAZE | 56K | 5% | 1/16W | |
| R627 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R628 | 1-216-849-11 | METAL GLAZE | 220K | 5% | 1/16W | |
| R629 | 1-216-832-11 | METAL GLAZE | 8.2K | 5% | 1/16W | |
| R630 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R631 | 1-216-844-11 | METAL GLAZE | 82K | 5% | 1/16W | |
| R632 | 1-216-819-11 | METAL GLAZE | 680 | 5% | 1/16W | |
| R633 | 1-216-824-11 | METAL GLAZE | 1.8K | 5% | 1/16W | |
| R634 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R635 | 1-216-853-11 | METAL GLAZE | 470K | 5% | 1/16W | |
| R636 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R638 | 1-216-823-11 | METAL GLAZE | 1.5K | 5% | 1/16W | |
| R639 | 1-216-830-11 | METAL GLAZE | 5.6K | 5% | 1/16W | |
| R640 | 1-216-827-11 | METAL GLAZE | 3.3K | 5% | 1/16W | |
| R641 | 1-216-818-11 | METAL GLAZE | 560 | 5% | 1/16W | |
| R642 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R643 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R644 | 1-216-823-11 | METAL GLAZE | 1.5K | 5% | 1/16W | |
| R645 | 1-216-830-11 | METAL GLAZE | 5.6K | 5% | 1/16W | |
| R647 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R648 | 1-216-809-11 | METAL GLAZE | 100 | 5% | 1/16W | |
| R649 | 1-216-685-11 | METAL CHIP | 27K | 0.50% | 1/10W | |
| R650 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W | |
| R651 | 1-216-675-11 | METAL CHIP | 10K | 0.50% | 1/10W | |
| R653 | 1-216-840-11 | METAL GLAZE | 39K | 5% | 1/16W | |
| R654 | 1-216-815-11 | METAL GLAZE | 330 | 5% | 1/16W | |
| R656 | 1-216-828-11 | METAL GLAZE | 3.9K | 5% | 1/16W | |
| R657 | 1-216-818-11 | METAL GLAZE | 560 | 5% | 1/16W | |
| R659 | 1-216-840-11 | METAL GLAZE | 39K | 5% | 1/16W | |
| R661 | 1-216-813-11 | METAL GLAZE | 220 | 5% | 1/16W | |
| R662 | 1-216-813-11 | METAL GLAZE | 220 | 5% | 1/16W | |
| R663 | 1-216-813-11 | METAL GLAZE | 220 | 5% | 1/16W | |
| R664 | 1-216-827-11 | METAL GLAZE | 3.3K | 5% | 1/16W | |
| R665 | 1-216-830-11 | METAL GLAZE | 5.6K | 5% | 1/16W | |
| R669 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R671 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |

### NETWORK RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RB362 | 1-236-436-11 | NETWORK, RES 100K | |
| RB363 | 1-236-424-11 | NETWORK, RES 10K | |
| RB561 | 1-236-436-11 | NETWORK, RES 100K | |
| RB562 | 1-236-436-11 | NETWORK, RES 100K | |
| RB563 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB564 | 1-236-436-11 | NETWORK, RES 100K | |
| RB565 | 1-236-436-11 | NETWORK, RES 100K | |
| RB566 | 1-236-436-11 | NETWORK, RES 100K | |
| RB569 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB573 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB574 | 1-236-436-11 | NETWORK, RES 100K | |
| RB575 | 1-236-436-11 | NETWORK, RES 100K | |
| RB576 | 1-236-424-11 | NETWORK, RES 10K | |
| RB577 | 1-236-424-11 | NETWORK, RES 10K | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RB611 | 1-236-424-11 | NETWORK, RES 10K | |
| RB612 | 1-236-436-11 | NETWORK, RES 100K | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV561 | 1-238-093-11 | RES, ADJ CERMET 100K | |

FLEXIBLE BOARD

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W801 | 1-632-930-11 | FP-243 FLEXIBLE BOARD | |
| W802 | 1-632-930-11 | FP-243 FLEXIBLE BOARD | |
| W803 | 1-632-930-11 | FP-243 FLEXIBLE BOARD | |

CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X361 | 1-577-118-11 | VIBRATOR, LITHIUM NIOBATE | |
| X561 | 1-527-997-21 | VIBRATOR, CRYSTAL (32.768KHz) | |

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## *A-7062-104-A TI-20P BOARD, COMPLETE

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CAPACITOR

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C801 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V | |
| C802 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C804 | 1-162-913-11 | CERAMIC CHIP 8PF | 0.5PF | 50V | |
| C805 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |
| C807 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |
| C808 | 1-162-964-11 | CERAMIC CHIP 0.001MF | 10% | 50V | |
| C810 | 1-135-157-21 | TANTAL. CHIP 10MF | 20% | 6.3V | |
| C811 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V | |
| C812 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |
| C813 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V | |
| C814 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V | |
| C815 | 1-162-949-11 | CERAMIC CHIP 47PF | 5% | 50V | |
| C816 | 1-164-156-11 | CERAMIC CHIP 0.1MF | | 25V | |
| C817 | 1-162-921-11 | CERAMIC CHIP 33PF | 5% | 50V | |
| C818 | 1-162-953-11 | CERAMIC CHIP 100PF | 5% | 50V | |
| C819 | 1-162-970-11 | CERAMIC CHIP 0.01MF | 10% | 25V | |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN801 | 1-568-368-41 | CONNECTOR, BOARD TO BOARD 20P | |

TRIMMER

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CT801 | 1-141-368-11 | CAP, CHIP TRIMMER 30PF | |
| CT802 | 1-141-368-11 | CAP, CHIP TRIMMER 30PF | |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D801 | 8-713-300-88 | DIODE 1T33C-01 | |

IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC801 | 8-759-979-96 | IC MB8464A-15LLPF | |
| IC802 | 8-759-140-26 | IC UPD6145G-601 | |
| IC803 | 8-759-983-54 | IC MB87485 | |

COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L801 | 1-410-377-31 | INDUCTOR CHIP 4.7UH | |
| L802 | 1-410-384-31 | INDUCTOR CHIP 18UH | |
| L803 | 1-410-389-31 | INDUCTOR CHIP 47UH | |
| L804 | 1-410-381-11 | INDUCTOR CHIP 10UH | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q801 | 8-729-905-18 | TRANSISTOR DTC144EU | |
| Q802 | 8-729-403-24 | TRANSISTOR XN4210 | |
| Q803 | 8-729-402-19 | TRANSISTOR XN6501 | |

RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R801 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R803 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R805 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R806 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R809 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R810 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R812 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R815 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R816 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R818 | 1-216-837-11 | METAL GLAZE | 22K | 5% | 1/16W | |
| R819 | 1-216-829-11 | METAL GLAZE | 4.7K | 5% | 1/16W | |
| R820 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R821 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R822 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R823 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R824 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |
| R825 | 1-216-845-11 | METAL GLAZE | 100K | 5% | 1/16W | |
| R826 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R827 | 1-216-821-11 | METAL GLAZE | 1K | 5% | 1/16W | |
| R828 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R829 | 1-216-825-11 | METAL GLAZE | 2.2K | 5% | 1/16W | |
| R830 | 1-216-817-11 | METAL GLAZE | 470 | 5% | 1/16W | |
| R831 | 1-216-817-11 | METAL GLAZE | 470 | 5% | 1/16W | |
| R832 | 1-216-833-11 | METAL GLAZE | 10K | 5% | 1/16W | |

NETWORK RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RB801 | 1-236-424-11 | NETWORK, RES 10K | |
| RB802 | 1-236-424-11 | NETWORK, RES 10K | |
| RB803 | 1-236-432-11 | NETWORK, RES 47K | |
| RB804 | 1-236-424-11 | NETWORK, RES 10K | |

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## *A-7062-105-A IN-25 BOARD, COMPLETE

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CAPACITOR

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C702 | 1-126-206-11 | ELECT CHIP 100MF | 20% | 6.3V | |
| C703 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V | |
| C704 | 1-163-117-00 | CERAMIC CHIP 100PF | 5% | 50V | |
| C705 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V | |
| C706 | 1-126-205-11 | ELECT CHIP 47MF | 20% | 6.3V | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C707 | 1-124-778-00 | ELECT CHIP 22MF 20% | 6.3V |
| C708 | 1-163-103-00 | CERAMIC CHIP 27PF 5% | 50V |
| C709 | 1-126-206-11 | ELECT CHIP 100MF 20% | 6.3V |
| C710 | 1-164-232-11 | CERAMIC CHIP 0.01MF | 50V |
| C711 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C712 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C713 | 1-164-005-11 | CERAMIC CHIP 0.47MF | 25V |
| | | CONNECTOR | |
| CN701 | *1-568-262-11 | CONNECTOR, BOARD TO BOARD(F)20P | |
| CN702 | 1-569-158-11 | CONNECTOR, BOARD TO BOARD(F)14P | |
| CN703 | *1-565-529-21 | PIN, CONNECTOR (PC BOARD) 4P | |
| CN704 | 1-565-529-21 | PIN, CONNECTOR (PC BOARD) 4P | |
| CN705 | 1-566-543-31 | CONNECTOR, FPC (NON ZIF) 11P | |
| CN706 | *1-566-188-11 | PIN, CONNECTOR (PC BOARD) 9P | |
| CN708 | *1-565-876-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| CN709 | *1-565-876-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| | | DIODE | |
| D701 | 8-719-420-15 | DIODE MA8082 | |
| D702 | 8-719-420-15 | DIODE MA8082 | |
| D703 | 8-719-420-15 | DIODE MA8082 | |
| D704 | 8-719-420-15 | DIODE MA8082 | |
| D705 | 8-719-420-15 | DIODE MA8082 | |
| D710 | 8-719-420-15 | DIODE MA8082 | |
| D711 | 8-719-420-15 | DIODE MA8082 | |
| | | IC | |
| IC701 | 8-759-974-21 | IC S-8054ALRS-LN | |
| IC702 | 8-759-990-78 | IC S-81350AG-REG | |
| IC703 | 8-759-206-55 | IC TC74HC4538F | |
| IC704 | 8-759-100-93 | IC UPC393G2 | |
| | | COIL | |
| L701 | 1-412-029-11 | INDUCTOR CHIP 10UH | |
| L703 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L704 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| | | TRANSISTOR | |
| Q701 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q702 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q703 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q704 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q705 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q706 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q707 | 8-729-101-07 | TRANSISTOR 2SB798-DL | |
| Q708 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q711 | 8-729-903-30 | TRANSISTOR DTC143TK | |
| | | RESISTOR | |
| R701 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R702 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R703 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R704 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R705 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R706 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R707 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R708 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |
| R709 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |
| R710 | 1-216-043-00 | METAL GLAZE 560 5% 1/10W | |
| R711 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R712 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R713 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R714 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |
| R715 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R716 | 1-216-075-00 | METAL GLAZE 12K 5% 1/10W | |
| R717 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R718 | 1-216-170-00 | METAL GLAZE 68 5% 1/8W | |
| R719 | 1-216-099-00 | METAL GLAZE 120K 5% 1/10W | |
| R720 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R721 | 1-216-111-00 | METAL GLAZE 390K 5% 1/10W | |
| R722 | 1-216-113-00 | METAL GLAZE 470K 5% 1/10W | |
| R723 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R724 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R725 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R727 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R729 | 1-216-296-00 | METAL GLAZE 0 5% 1/8W | |
| R730 | 1-216-296-00 | METAL GLAZE 0 5% 1/8W | |
| R731 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R732 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R733 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |

**************************************************************

*A-7070-973-A CD-19P BOARD, COMPLETE
***********************

| | | | |
|---|---|---|---|
| | | CAPACITOR | |
| C901 | 1-163-133-00 | CERAMIC CHIP 470PF 5% | 50V |
| C902 | 1-162-638-11 | CERAMIC CHIP 1MF | 16V |
| C903 | 1-135-089-21 | TANTAL. CHIP 6.8MF 20% | 20V |
| C904 | 1-162-970-11 | CERAMIC CHIP 0.01MF 10% | 25V |
| C905 | 1-135-177-21 | TANTAL. CHIP 1MF 20% | 20V |
| C906 | 1-162-995-11 | CERAMIC CHIP 0.022MF | 50V |
| C907 | 1-135-162-21 | TANTAL. CHIP 33MF 20% | 6.3V |
| C908 | 1-162-995-11 | CERAMIC CHIP 0.022MF | 50V |
| C909 | 1-135-155-21 | TANTAL. CHIP 4.7MF 20% | 16V |
| C910 | 1-162-995-11 | CERAMIC CHIP 0.022MF | 50V |
| C911 | 1-162-637-11 | CERAMIC CHIP 0.47MF | 16V |
| | | CONNECTOR | |
| CN301 | 1-568-365-41 | CONNECTOR, BOARD TO BOARD 14P | |
| | | TRANSISTOR | |
| Q901 | 8-765-420-02 | TRANSISTOR 2SK300-3 | |

When indicating parts by reference number, please include the board name.

# CD-19P MA-38P ST-28

### RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R901 | 1-216-817-11 | METAL GLAZE 470 5% 1/16W | |
| R902 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R903 | 1-216-848-11 | METAL GLAZE 180K 5% 1/16W | |
| R904 | 1-216-838-11 | METAL GLAZE 27K 5% 1/16W | |
| R905 | 1-216-809-11 | METAL GLAZE 100 5% 1/16W | |
| R906 | 1-216-819-11 | METAL GLAZE 680 5% 1/16W | |
| R907 | 1-216-837-11 | METAL GLAZE 22K 5% 1/16W | |

* * *

***A-7071-091-A MA-38P BOARD, COMPLETE**

### CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C951 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C952 | 1-126-206-11 | ELECT CHIP 100MF 20% 6.3V | |
| C953 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C954 | 1-163-989-11 | CERAMIC CHIP 0.033MF 10% 25V | |
| C955 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C956 | 1-162-638-11 | CERAMIC CHIP 1MF 16V | |
| C957 | 1-126-205-11 | ELECT CHIP 47MF 20% 6.3V | |
| C958 | 1-164-156-11 | CERAMIC CHIP 0.1MF 25V | |
| C959 | 1-162-638-11 | CERAMIC CHIP 1MF 16V | |
| C960 | 1-163-081-00 | CERAMIC CHIP 0.22MF 25V | |
| C961 | 1-162-638-11 | CERAMIC CHIP 1MF 16V | |
| C962 | 1-163-081-00 | CERAMIC CHIP 0.22MF 25V | |
| C963 | 1-126-206-11 | ELECT CHIP 100MF 20% 6.3V | |
| C964 | 1-164-156-11 | CERAMIC CHIP 0.1MF 25V | |
| C965 | 1-126-206-11 | ELECT CHIP 100MF 20% 6.3V | |
| C967 | 1-164-156-11 | CERAMIC CHIP 0.1MF 25V | |
| C968 | 1-164-156-11 | CERAMIC CHIP 0.1MF 25V | |

### CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN951 | *1-565-542-11 | PIN, CONNECTOR (PC BOARD) 3P | |

### DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D951 | 8-719-420-15 | DIODE MA8082 | |
| D952 | 8-719-420-15 | DIODE MA8082 | |
| D953 | 8-719-420-15 | DIODE MA8082 | |
| D954 | 8-719-420-15 | DIODE MA8082 | |
| D955 | 8-719-420-15 | DIODE MA8082 | |

### IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC951 | 8-759-111-56 | IC UPC4572G2 | |

### JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J951 | 1-507-899-00 | JACK (SMALL TYPE) (MIC PLUG IN POWER) | |
| J952 | 1-563-454-11 | JACK, MINIATURE (DC OUT) | |

### COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L951 | 1-410-658-31 | INDUCTOR CHIP 220UH | |
| L952 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L953 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L954 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L955 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L956 | 1-410-192-51 | INDUCTOR CHIP 1UH | |

### TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q951 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q952 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q953 | 8-729-905-35 | TRANSISTOR 2SC4081 | |
| Q954 | 8-729-101-07 | TRANSISTOR 2SB798-DL | |

### RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R951 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R952 | 1-216-864-11 | METAL GLAZE 0 5% 1/16W | |
| R954 | 1-216-844-11 | METAL GLAZE 82K 5% 1/16W | |
| R955 | 1-216-845-11 | METAL GLAZE 100K 5% 1/16W | |
| R956 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R957 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R958 | 1-216-833-11 | METAL GLAZE 10K 5% 1/16W | |
| R959 | 1-216-828-11 | METAL GLAZE 3.9K 5% 1/16W | |
| R960 | 1-216-826-11 | METAL GLAZE 2.7K 5% 1/16W | |
| R961 | 1-216-830-11 | METAL GLAZE 5.6K 5% 1/16W | |
| R962 | 1-216-162-00 | METAL GLAZE 33 5% 1/8W | |
| R963 | 1-216-821-11 | METAL GLAZE 1K 5% 1/16W | |
| R964 | 1-216-822-11 | METAL GLAZE 1.2K 5% 1/16W | |
| R965 | 1-216-831-11 | METAL GLAZE 6.8K 5% 1/16W | |
| R966 | 1-216-831-11 | METAL GLAZE 6.8K 5% 1/16W | |
| R967 | 1-216-843-11 | METAL GLAZE 68K 5% 1/16W | |
| R968 | 1-216-845-11 | METAL GLAZE 100K 5% 1/16W | |
| R969 | 1-216-838-11 | METAL GLAZE 27K 5% 1/16W | |
| R970 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |
| R971 | 1-216-843-11 | METAL GLAZE 68K 5% 1/16W | |
| R972 | 1-216-845-11 | METAL GLAZE 100K 5% 1/16W | |
| R973 | 1-216-838-11 | METAL GLAZE 27K 5% 1/16W | |
| R974 | 1-216-825-11 | METAL GLAZE 2.2K 5% 1/16W | |

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***1-632-926-11 ST-28 BOARD**

### CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN536 | 1-565-528-11 | PIN, CONNECTOR (PC BOARD) 3P | |
| CN537 | *1-566-762-11 | PIN, CONNECTOR (PC BOARD) 7P | |
| CN538 | *1-566-758-11 | PIN, CONNECTOR (PC BOARD) 3P | |
| CN539 | 1-565-527-11 | PIN, CONNECTOR (PC BOARD) 2P | |
| CN540 | 1-565-527-11 | PIN, CONNECTOR (PC BOARD) 2P | |

### COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L535 | 1-410-337-11 | INDUCTOR 1UH | |
| L536 | 1-410-337-11 | INDUCTOR 1UH | |

When indicating parts by reference number, please include the board name.

## ST-28 LI-15 FK-13 FK-17 JK-48P AG-2

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R536 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |

SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S535 | 1-570-689-11 | SWITCH, KEY BOARD (START/STOP) | |
| S536 | 1-553-977-00 | SWITCH, SLIDE (STANBY/LOCK) | |

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*1-632-927-11 LI-15 BOARD

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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C851 | 1-135-156-21 | TANTAL. CHIP 6.8MF 20% | 10V |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN851 | *1-566-758-11 | PIN, CONNECTOR (PC BOARD) 3P | |

BATTERY HOLDER

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J851 | 1-550-104-11 | HOLDER, BATTERY | |

SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S851 | 1-553-977-41 | SWITCH, SLIDE (EVF CONT) | |

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*1-632-928-11 FK-13 BOARD

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DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D881 | 8-719-400-18 | DIODE MA152WK | |
| D882 | 8-719-400-18 | DIODE MA152WK | |
| D883 | 8-719-400-18 | DIODE MA152WK | |

RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R881 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R882 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R883 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |

SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S881 | 1-571-684-11 | SWITCH, TACTIL (WHT BAL) | |
| S882 | 1-571-684-11 | SWITCH, TACTIL (BACK LIGHT) | |
| S883 | 1-571-684-11 | SWITCH, TACTIL (FOCUS) | |
| S884 | 1-571-684-11 | SWITCH, TACTIL (SHUTTER SPEED) | |
| S885 | 1-571-684-11 | SWITCH, TACTIL (SUPERIMPOSE) | |
| S886 | 1-553-977-41 | SWITCH, SLIDE (AUTO LOCK) | |

FLEXIBLE BOARD

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W881 | 1-632-931-11 | FP-244 FLEXIBLE BOARD | |
| W882 | 1-632-932-11 | FP-287 FLEXIBLE BOARD | |

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*1-632-929-11 FK-17 BOARD

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DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D891 | 8-719-400-18 | DIODE MA152WK | |
| D892 | 8-719-400-18 | DIODE MA152WK | |

IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC891 | 8-759-234-77 | IC TC4S66F | |

SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S891 | 1-571-684-11 | SWITCH, TACTIL (MEMORY) | |
| S892 | 1-571-684-11 | SWITCH, TACTIL (COLOR/MODE) | |
| S893 | 1-571-684-11 | SWITCH, TACTIL (DATE +) | |
| S894 | 1-571-684-11 | SWITCH, TACTIL (TIME (NEXT)) | |

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*1-632-924-11 JK-48P BOARD

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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C931 | 1-164-232-11 | CERAMIC CHIP 0.01MF | 50V |
| C932 | 1-164-232-11 | CERAMIC CHIP 0.01MF | 50V |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D931 | 8-719-420-15 | DIODE MA8082 | |
| D932 | 8-719-420-15 | DIODE MA8082 | |

JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J931 | 1-507-950-61 | JACK (SMALL TYPE) (ZOOM) | |

COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L931 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L932 | 1-410-192-51 | INDUCTOR CHIP 1UH | |
| L933 | 1-410-192-51 | INDUCTOR CHIP 1UH | |

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*1-633-904-11 AG-2 BOARD

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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C801 | 1-164-161-11 | CERAMIC CHIP 2200PF 10% | 50V |
| C802 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C803 | 1-164-779-00 | ELECT 10MF 20% | 16V |
| C804 | 1-126-599-11 | ELECT 330MF 20% | 6.3V |
| C805 | 1-164-346-11 | CERAMIC CHIP 1MF | 16V |
| C806 | 1-164-161-11 | CERAMIC CHIP 2200PF 10% | 50V |
| C807 | 1-126-205-11 | ELECT 47MF 20% | 6.3V |
| C808 | 1-126-205-11 | ELECT 47MF 20% | 6.3V |

When indicating parts by reference number, please include the board name.

# AG-2

### CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN801 | 1-566-759-11 | PIN, CONNECTOR 4P | |
| CN801 | 1-566-759-11 | PIN, CONNECTOR 4P | |

### IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC801 | 8-759-939-73 | IC BA3308 | |

### RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R801 | 1-216-023-00 | METAL GLAZE | 82 | 5% | 1/10W | |
| R802 | 1-216-062-00 | METAL GLAZE | 3.6K | 5% | 1/10W | |
| R803 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R804 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R805 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R806 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R807 | 1-216-062-00 | METAL GLAZE | 3.6K | 5% | 1/10W | |
| R808 | 1-216-023-00 | METAL GLAZE | 82 | 5% | 1/10W | |

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### MISCELLANEOUS

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | ⚠1-466-250-11 | TRANSFORMER UNIT | |
| | 1-542-101-21 | MICROPHONE (C-2020A) | |
| | 1-547-335-31 | LENS, ZOOM (VCL-1106XA) | |
| | 1-547-393-11 | FILTER BLOCK, OPTICAL (OFB-02-G) | |
| | 1-547-394-11 | FILTER, OPTICAL (PN-02-02) | |
| | 1-575-245-11 | CORD, CONNECTION | |
| IC901 | A-7091-132-A | CCD IMAGER ASSY (ICX027BK-1) | |
| M904 | 3-707-660-01 | METER ASSY, EE (IRIS) | |
| M905 | 3-707-659-01 | MOTOR ASSY, AF/Z GEAR (FOCUS/ZOOM) | |
| S901 | 3-707-662-01 | SW ASSY, LEAF (FOCUS END) | |
| S951 | 1-572-168-11 | SWITCH, PUSH (ZOOM) | |
| V901 | ⚠1-452-482-11 | CRT ASSY (M91JYZ60WB) | |

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### ACCESSORIES AND PACKING MATERIALS

| Part No. | Description | Remark |
|---|---|---|
| 1-465-330-11 | REMOTE COMMANDER (WIRED) | |
| 1-575-244-11 | CORD, CONNECTION | |
| *3-741-228-01 | CUSHION (UPPER) | |
| *3-741-229-01 | CUSHION (LOWER) | |
| 3-741-236-01 | STRAP, HAND | |
| *3-741-248-01 | INDIVIDUAL CARTON | |
| 3-750-958-11 | MANUAL, INSTRUCTION (ENGLISH) | |
| 3-750-958-41 | MANUAL, INSTRUCTION (FRENCH, GERMAV, SPANISH) | |
| 3-750-958-51 | MANUAL, INSTRUCTION (SWEDISH, DUTCH, ITALIAN) | |

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### HARDWARE LIST

### SCREW

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | 7-621-281-15 | SCREW +P 2X2 | |
| | 7-627-553-47 | PRECISION SCREW +P 2X4 TYPE 3 | |

* * *

When indicating parts by reference number, please include the board name.

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

# SECTION 7
# ELECTRICAL ADJUSTMENTS

**During the adjustment, see the arrangement diagram for adjustment parts from page 160.**

## 7-1. PRE-ADJUSTMENT PREPARATIONS

**Note: Use the color reproduction chart for CCD-TR55E**

### 7-1-1. List of Servicing jigs

- Oscilloscope
- Regulated power supply (2 units)
- Adjusting screwdriver
- Color monitor
- Vectorscope
- Digital voltmeter
- Frequency counter
- Alignment tape: Operation check WR5-5CSP (8-967-995-47)

| Ref. No. | Part Name | Part No. | Use |
|---|---|---|---|
| J-1 | Filter (C14) for color temperature correction (Combination of C2 and C12) | J-6080-058-A | Auto white balance confirmation |
| J-2 | ND filter 1.0 | J-6080-808-A | Max. gain adjustment (two filters used) |
|  | ND filter 0.4 | J-6080-806-A | Iris adjustment, iris in/out adjustment (two used) |
|  | ND filter 0.3 | J-6080-818-A | Max. gain adjustment |
|  | ND filter 0.1 | J-6080-807-A | Iris adjustment, iris in/out adjustment |
| J-3 | Pattern box PTB-450* | J- |  |
| J-4 | Pattern box color chart | J-6020-250-A |  |
| J-5 | Siemens star | J-6080-875-A | For flange back adjustment |
| J-6 | AF microprocessor data reading jig | J-6082-025-A |  |
| J-7 | Adjustment remote controller | J-6082-053-A |  |
| J-8 | Extention cord (14P) | J-6082-061-A | Extention for IN-25 board (when repairing VC-66P and DI-24P board) |
|  |  |  | Extention for CD-19P board (when repairing VC-66P and DI-24P board) |
| J-9 | Extention cord (11P) | J-6082-013-A | Extention for FK-13 board (when operating the switches) |
| J-10 | Extention cord (20P) | J-6082-063-B | Extention for IN-25 board (when repairing VC-66P and DI-24P board) |
|  |  |  | Extention for LD-20P board (when repairing VC-66P and DI-24P board) |
|  |  |  | Extention for TI-20P board (when repairing TI-20P board) |
| J-11 | Extention cord (4P) | J-6082-084-A | For the adjustment remote controller |

* PTB-500 (J-6029-140-A) can also be used.

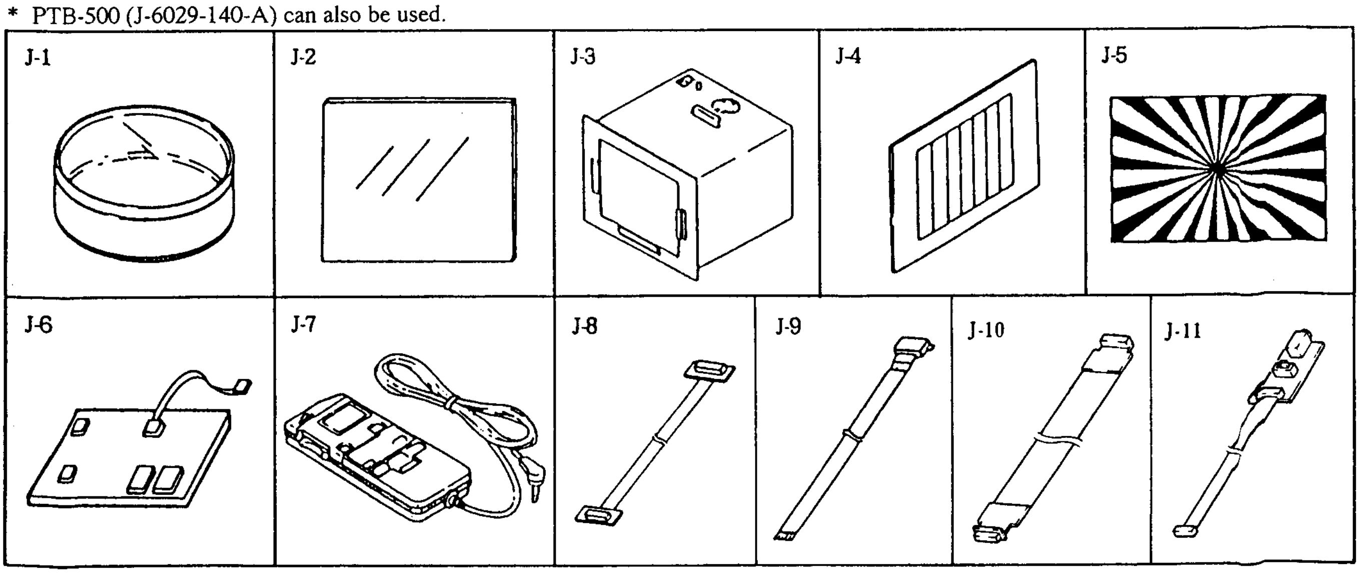


Fig. 7-1.

### 7-1-2. Preparation

**Note:** Refer to "2. DISASSEMBLY" for ditails on removal of the cabinet and various boards.

1) Connect the various devices for adjustment as shown in Fig. 7-3-1. (Except system control system adjustment.)
2) The EVF (electronic viewfinder) is needed for confirmation of the white balence mode and shutter speed. Remove CN709 on the IN-25 board when the EVF is not needed.
3) The mic amplifer (MA-38P board) is not needed. Remove CN708 on the IN-25 board.
4) When adjusting system control system and measuring the voltages and waveforms, unfold and connect the various boards as shown in Fig. 7-3-2. (Refer to Fig. 7-3-1. on connecting the various divices for adjsutment.)

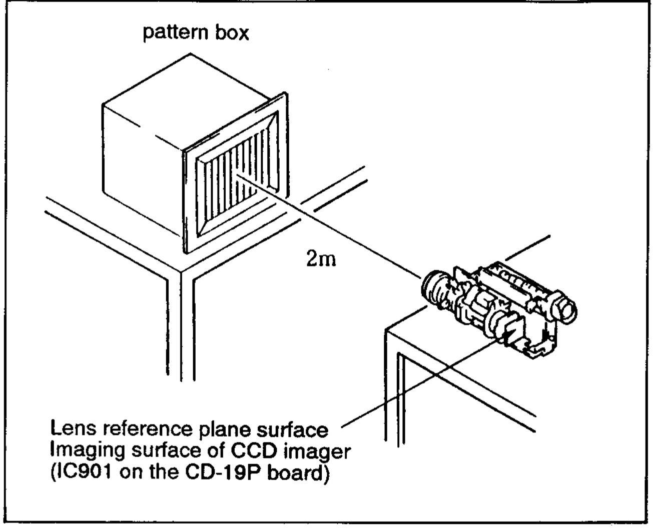

pattern box
2m
Lens reference plane surface
Imaging surface of CCD imager
(IC901 on the CD-19P board)

Fig. 7-2.

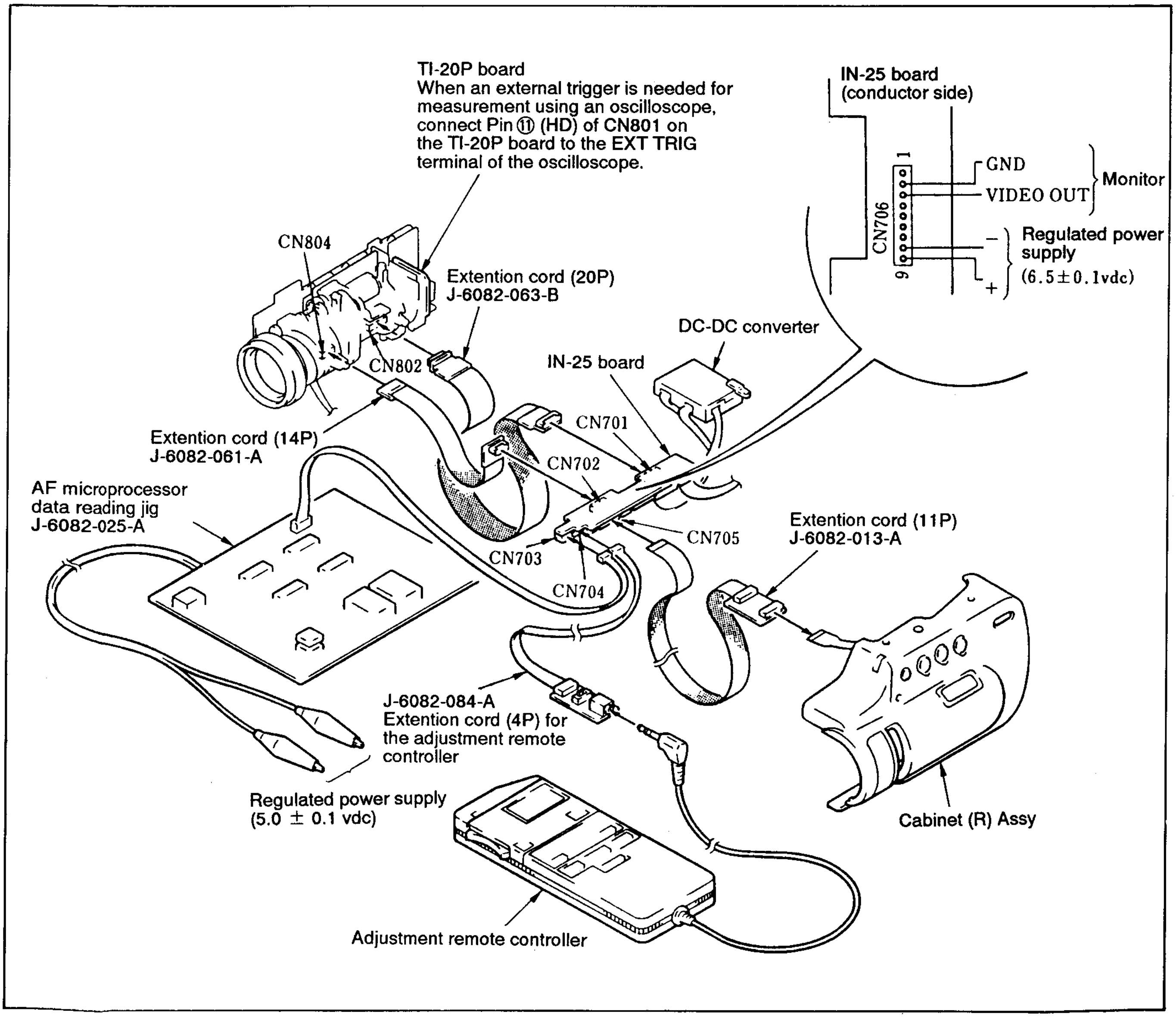

TI-20P board
When an external trigger is needed for measurement using an oscilloscope, connect Pin ⑪ (HD) of CN801 on the TI-20P board to the EXT TRIG terminal of the oscilloscope.
IN-25 board
(conductor side)
1
CN706
9
GND
VIDEO OUT
Monitor
–
+
Regulated power supply
(6.5±0.1vdc)
CN804
Extention cord (20P)
J-6082-063-B
DC-DC converter
CN802
IN-25 board
CN701
Extention cord (14P)
J-6082-061-A
CN702
AF microprocessor
data reading jig
J-6082-025-A
CN705
Extention cord (11P)
J-6082-013-A
CN703
CN704
J-6082-084-A
Extention cord (4P) for the adjustment remote controller
Regulated power supply
(5.0 ± 0.1 vdc)
Cabinet (R) Assy
Adjustment remote controller

Fig. 7-3-1.

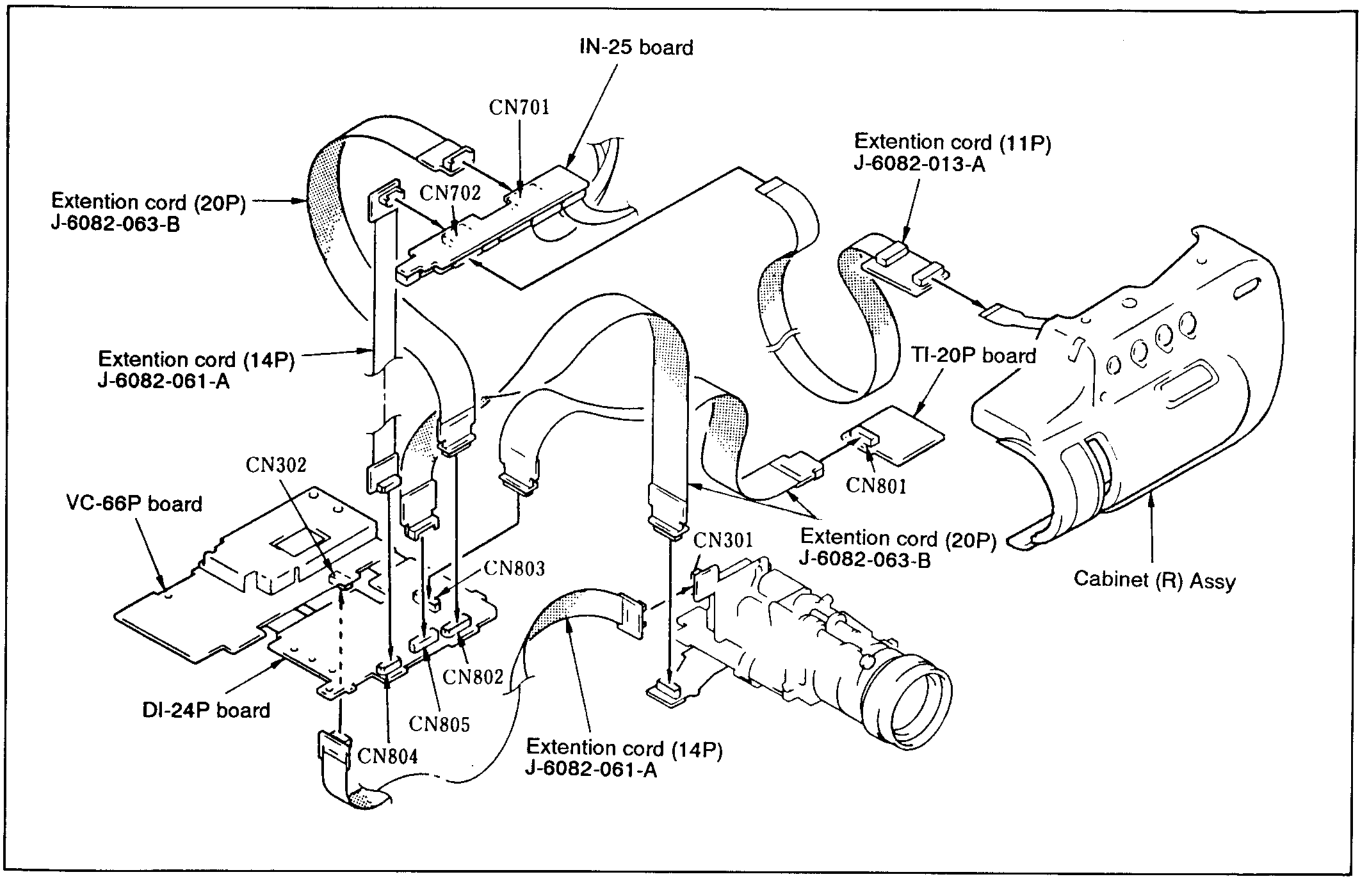

IN-25 board
CN701
CN702
Extention cord (20P)
J-6082-063-B
Extention cord (11P)
J-6082-013-A
Extention cord (14P)
J-6082-061-A
TI-20P board
CN302
VC-66P board
CN801
CN301
Extention cord (20P)
J-6082-063-B
CN803
Cabinet (R) Assy
CN802
DI-24P board
CN805
CN804
Extention cord (14P)
J-6082-061-A

Fig. 7-3-2.

### 7-1-3. Precautions

1) Setting of Switches
   Unless specified otherwise, the switches are set to the following positions.
   1. Auto-lock switch (S886 on the FK-13 board) …… OFF
   2. White balance button (S881 on the FK-13 board) …… ☼ (indoors white balance mode)
   3. Shutter speed button (S884 on the FK-13 board) …… normal (1/60)

2) Adjustment Order
   As a rule, the adjustments are performed in the listed order.

3) Subjects
   1. Color bar chart (standard picture frame)
      When performing adjustment using the color bar chart, adjust the picture frame shown in Fig. 7-4. (standard picture frame).
   2. White pattern (standard picture frame)
      Remove the color bar chart from the pattern box and use the zoom lever so that the white pattern has the same size and is in the same position as the color bar chart (standard picture frame).

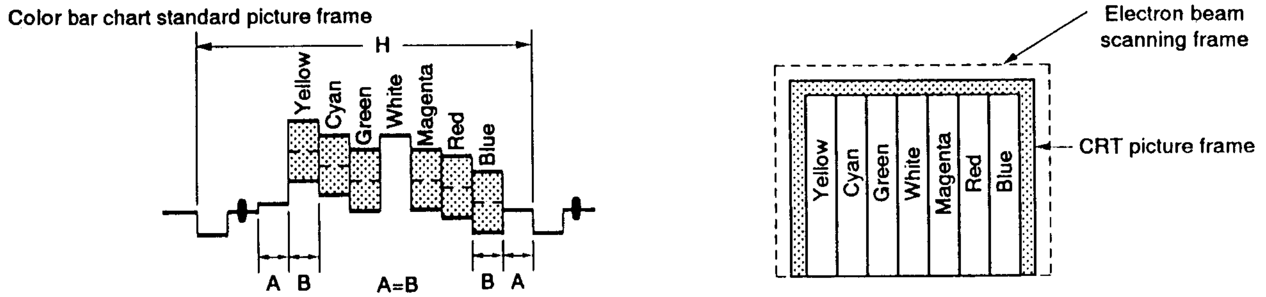

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

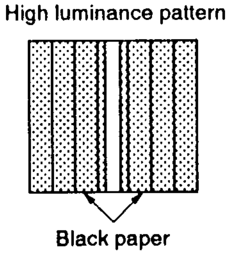
Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3. All white pattern
   Remove the color bar chart from the pattern box and set the zoom lever fully to the TELE (66 mm) side.
4. High luminance pattern
   Create the high luminance pattern as shown in Fig. 7-5., and adjust for the picture frame shown in Fig. 7-6.
5. Siemens star (J-6080-875-A)
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.


High luminance pattern
Black paper

Attach black paper over all sections of the pattern except for half of the white bar of the color bar chartt. Display the picture on the monitor with the standard picture frame.

Fig. 7-5.

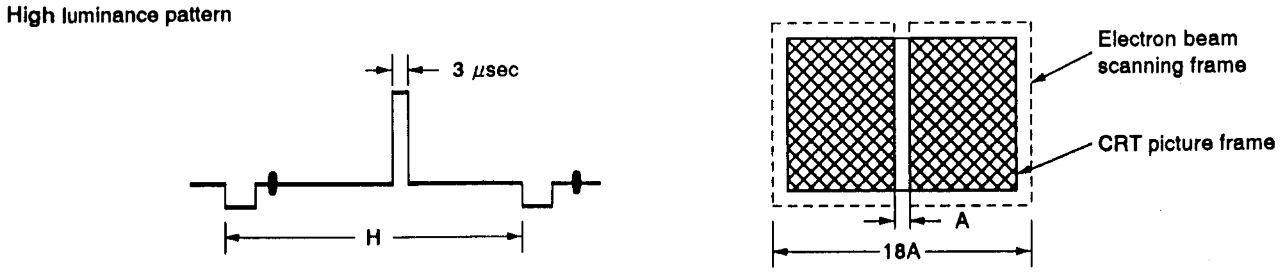

High luminance pattern
3 μsec
H
Electron beam scanning frame
CRT picture frame
A
18A

Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-6.

### 7-1-4. Adjustment Remote Controller

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microprocessor (IC361 on the DI-24P board). This microprocessor reads the data written in the nonvolatile memory of the microprocessor and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.

Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.

The adjustment remote controller performs bidirectional communications with the camera block microprocessor using the remote control signal lines (LINCS). Adjustment addressese and adjustment data increment/decrement commands are sent to the camera block microprocessor from the adjustment remote controller. Adjustment addresses and adjustment data are sent from the camera block microprocessor to the adjustment remote controller.

#### 1. Use of adjustment remote controller

Solder the lead wire to Pin (B6) (refer to 7-1-5) of the check point array on the VC-66P board.

1) Connect the adjsutment remote controller to CN704 on IN-25 board by the extention cord. (Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).)
2) Turn on the power of the main unit.
3) Connect Pin (B6) ($\overline{\text{CAM ADJ}}$) of the check point array to GND using a jumper wire.
   (This connection causes the EVR/AWB microprocessor to cease normal remote control operation and to begin adjustment dedicated communications.)
   **Note:** Be sure to make this connection only after turning on the power. The following will be displayed on the LCD of the adjustment remote controller if the connection is normal. (Adjustment data varies according to the unit.)

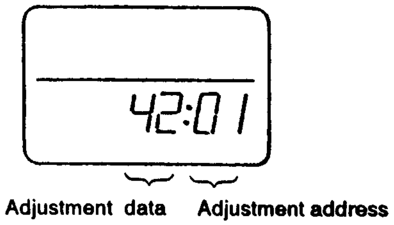


Fig. 7-7.

4) Designate the desired adjustment address using the adjustment remote controller. The adjustment address is incremented by pressing the FF ( ►► ) button and decremented by pressing the REW ( ◄◄ ) button. (The adjustment address is indicated in decimal, and there are 89 addresses from 01 to 89. The adjustment address corresponds to the EVR (IC252, IC302 on the VC-66P board and IC611 on the DI-24P board) output terminals. Refer to Table 7-3. for the adjustment contents of the various addresses.)

5) Perform adjustment by incrementing or decrementing the adjustment data.
The adjustment data is incremented by pressing the PLAY ( ► ) button. The adjustment data is decremented by pressing the STOP ( ■ ) button.
- The adjustment address is indicated in hexadecimal. There are 256 values from 00 to FF.

| Hexadecimal | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Indication on LCD | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | c | d | E | F |
| Decimal equivalent | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Table 7-1.

- The adjustment data corresponds to the EVR (IC252, IC302 on the VC-66P board and IC611 on the DI-24P board) output voltage, and is as follows.

| Adjustment data<br>( ) is decimal equivalent | EVR output voltage |
|---|---|
| FF (=255) | Maximum value (approx. 5 Vdc) |
| ↑ F0 (=240) | ↑ |
| E0 (=224) | |
| D0 (=208) | |
| C0 (=192) | |
| B0 (=176) | |
| A0 (=160) | |
| 90 (=144) | |
| 80 (=128) | Center value (approx. 2.5 Vdc) |
| 70 (=112) | |
| 60 (=96) | |
| 50 (=80) | |
| 40 (=64) | |
| 30 (=48) | |
| 20 (=32) | |
| ↓ 10 (=16) | ↓ |
| 00 (=0) | Minimum value (approx. 0 Vdc) |

Table 7-2.

6) The adjustment address is changed using the FF ( ►► ) button or REW ( ◄◄ ) button to store the adjustment data in the nonvolatile memory of EVR/AWB microprocessor (IC361 on the DI-24P board).
(The new adjustment data is not stored in the nonvolatile memory unless this operation is performed.)

## 2. Precautions on use of adjustment remote controller

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote controller. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

### 3. Adjustment address table

| Adjustment Address | Adjustment Voltage Output Terminal | Adjustment Item | Remarks | Adjustment Data Memo Column |
|---|---|---|---|---|
| 01 | Pin ⑱ of IC252 | DELTA R | Auto white balance adjustment | |
| 02 | Pin ⑲ of IC252 | DELTA B | | |
| 03 | Pin ② of IC252 | TITLE PEDESTAL | | |
| 04 | Pin ③ of IC252 | C-PED | Fixed at "A0" | A0 |
| 05 | Pin ④ of IC252 | R-Y GAIN | Color reproduction (gain) adjustment | |
| 06 | Pin ⑤ of IC252 | B-Y GAIN | | |
| 07 | Pin ⑥ of IC252 | R-Y HUE | Color reproduction (hue) adjustment | |
| 08 | Pin ⑦ of IC252 | B-Y HUE | | |
| 09 | Pin ⑧ of IC252 | C LEVEL | | |
| 10 | Pin ⑨ of IC252 | TITLE Y | | |
| 11 | Pin ⑫ of IC252 | R GAIN | Indoor white balance adjustment | |
| 12 | Pin ⑬ of IC252 | B GAIN | | |
| 13 | Pin ⑱ of IC302 | C1 GAIN | Chroma matrix adjustment | |
| 14 | Pin ⑲ of IC302 | Y1 GAIN | Y matrix adjustment | |
| 15 | Pin ② of IC302 | TITLE A/D | | |
| 16 | Pin ③ of IC302 | BURST LEVEL | | |
| 17 | Pin ④ of IC302 | HUE CONT | | |
| 18 | Pin ⑤ of IC302 | SYNC LEVEL | | |
| 19 | Pin ⑥ of IC302 | SET UP | | |
| 20 | Pin ⑦ of IC302 | WHITE CLIP | White clip adjustment | |
| 21 | Pin ⑧ of IC302 | Y LEVEL | | |
| 22 | Pin ⑨ of IC302 | APERTURE | Aperture adjustment | |
| 23 | Pin ⑫ of IC302 | YH GAIN | YH level adjustment | |
| 24 | Pin ⑬ of IC302 | C2 GAIN | Chroma matrix adjustment | |
| 25 | Pin ⑱ of IC611 | IRIS | | |
| 26 | Pin ⑲ of IC611 | FOCUS SPEED | | |
| 27 | Pin ② of IC611 | HALL OFFSET | | |
| 28 | Pin ③ of IC611 | MAX GAIN | | |
| 29 | Pin ④ of IC611 | AGC | | |
| 30 | Pin ⑤ of IC611 | V SUB | | |
| 31 | | ——— | | |
| 32 | | ——— | | |
| 33 | | ——— | | – |
| 34 | | ——— | | – |
| 35 | | ——— | | – |
| 36 | | ——— | | – |

Table 7-3. (1)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>37</td><td></td><td>MODE</td><td>The following adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>01</td><td>Focus hunching</td></tr>
<tr><td>03</td><td>Zoom position</td></tr>
<tr><td>05</td><td>Hall, iris close</td></tr>
<tr><td>07</td><td>Hall, iris open</td></tr>
<tr><td>09</td><td>Hall in/out threshold</td></tr>
<tr><td>0B</td><td>Auto-focus LLA</td></tr>
<tr><td>FD</td><td>Auto-focus filter fixed at FA</td></tr>
<tr><td>FF</td><td>Auto-focus filter fixed at FH</td></tr>
</table></td><td>00</td></tr>
<tr><td>38</td><td></td><td>LLA</td><td>Auto-focus LLA adjustment</td><td></td></tr>
<tr><td>39</td><td></td><td>MACRO</td><td>Macro area adjustment</td><td></td></tr>
<tr><td>40</td><td></td><td>IN/OUT DOOR</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>41</td><td></td><td>LOW CONT</td><td>Fixed at 03</td><td>03</td></tr>
<tr><td>42</td><td></td><td>BASE H</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>43</td><td></td><td>THR UP</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>44</td><td></td><td>STEP</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>45</td><td></td><td>Hysteresis</td><td></td><td></td></tr>
<tr><td>46</td><td></td><td>HALL LEVEL</td><td></td><td></td></tr>
<tr><td>47</td><td></td><td>HANT LIMIT</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>48</td><td></td><td>FA BASE</td><td>Fixed at 28</td><td>28</td></tr>
<tr><td>49</td><td></td><td>INCLINE</td><td>Fixed at 06</td><td>06</td></tr>
<tr><td>50</td><td></td><td>TOPCHECK-THR</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>51</td><td></td><td>BACK RUSH</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>52</td><td></td><td>TOP CHECK SEARCH</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>53</td><td></td><td>TOP LIMIT</td><td>Fixed at 05</td><td>05</td></tr>
<tr><td>54</td><td></td><td>FOCUS FG</td><td>Fixed at 01</td><td>01</td></tr>
<tr><td>55</td><td></td><td>TOP CHECK COUNTER</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>56</td><td></td><td>MODE1 THR</td><td>Fixed at 04</td><td>04</td></tr>
<tr><td>57, 58</td><td></td><td>————</td><td>Not used</td><td>—</td></tr>
<tr><td>59</td><td></td><td>START R</td><td>Preset R CONT data for reset start</td><td>30</td></tr>
<tr><td>60</td><td></td><td>START B</td><td>Preset B CONT data for reset start</td><td>41</td></tr>
<tr><td>61</td><td></td><td>BTM SLP R</td><td>Fixed at 22</td><td>22</td></tr>
<tr><td>62</td><td></td><td>BTM SLP B</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>63</td><td></td><td>MDL SLP R</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>64</td><td></td><td>MDL SLP B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>65</td><td></td><td>TOP SLP R</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>66</td><td></td><td>TOP SLP B</td><td></td></tr>
<tr><td>67</td><td></td><td>KEIKO R</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>68</td><td></td><td>KEIKO B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>69</td><td></td><td>BTM UP</td><td>Fixed at 89</td><td>89</td></tr>
<tr><td>70</td><td></td><td>BTM DWN</td><td>Fixed at 61</td><td>61</td></tr>
</table>

Table 7-3. (2)

<table>
<tr><th>Adjustment Addrees</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>71</td><td></td><td>MDL UP</td><td>Fixed at 7C</td><td>7C</td></tr>
<tr><td>72</td><td></td><td>MDL DWN</td><td>Fixed at 6A</td><td>6A</td></tr>
<tr><td>73</td><td></td><td>TOP UP</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>74</td><td></td><td>TOP DWN</td><td></td></tr>
<tr><td>75</td><td></td><td>KEIKO DWN</td><td>Fixed at 8C</td><td>8C</td></tr>
<tr><td>76</td><td></td><td>R DWN LMT</td><td>Fixed at 1E</td><td>1E</td></tr>
<tr><td>77</td><td></td><td>B UP LMT</td><td rowspan="5">Auto white balance adjustment</td><td></td></tr>
<tr><td>78</td><td></td><td>R OUT LMT</td><td></td></tr>
<tr><td>79</td><td></td><td>B OUT LMT</td><td></td></tr>
<tr><td>80</td><td></td><td>R OUTDOOR</td><td></td></tr>
<tr><td>81</td><td></td><td>B OUTDOOR</td><td></td></tr>
<tr><td>82</td><td></td><td>BM DIVID</td><td>Fixed at 23</td><td>23</td></tr>
<tr><td>83</td><td></td><td>DELAY TM</td><td>Auto white balance tracking speed. Fixed at 10</td><td>10</td></tr>
<tr><td>84</td><td></td><td>FAST TM</td><td>Fixed at 20</td><td>20</td></tr>
<tr><td>85</td><td></td><td>CAM DDS 0</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>86</td><td></td><td>———</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>87</td><td></td><td>———</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>88</td><td></td><td>CAM ALN</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>89</td><td></td><td>AWB mode</td><td>The following auto white balance adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>01</td><td>Indoor preset output</td></tr>
<tr><td>02</td><td>Outdoor preset output</td></tr>
<tr><td>03</td><td>Data hold</td></tr>
<tr><td>05</td><td>Indoor/outdoor decision disable</td></tr>
<tr><td>10</td><td>White balance value output (within tracking zone)</td></tr>
<tr><td>E0</td><td>Auto white balance adjustment possible</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone evaluation invalid</td></tr>
</table></td><td>00</td></tr>
</table>

Table 7-3. (3)

### 7-1-5. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the VC-66P board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.

The terminal numbers and signal names for the check point array are shown in Table 7-4.

| Terminal No. | Signal Name | Terminal No. | Signal Name |
|---|---|---|---|
| A1 | G OUT | B1 | ID |
| A2 | N.C | B2 | N.C |
| A3 | OFFSET MIX | B3 | Y (LPF) OUT |
| A4 | Y0 | B4 | V SUB |
| A5 | Y1 | B5 | AW ADJ |
| A6 | C0 | B6 | $\overline{\text{CAM ADJ}}$ |
| A7 | C1 | B7 | MODE |
| A8 | CAM Y | B8 | N.C |
| A9 | YH | B9 | SHUTTER EN |
| A10 | CAM C | B10 | GND |
| A11 | N.C | B11 | IRIS DET |

Table 7-4.

*N. C ··· no connection

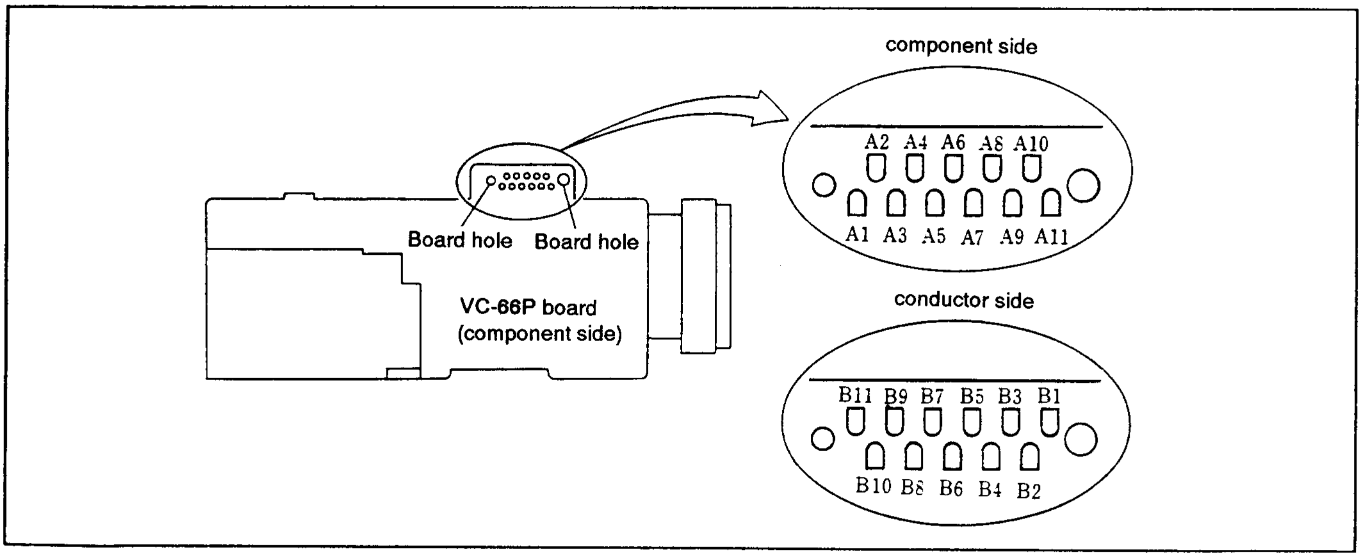

component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Board hole
Board hole
VC-66P board
(component side)
conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 7-8.

### 7-1-6. AF Microprocessor Data Reading Jig

The AF microprocessor data reading jig converts the serial data (output data varies according to hall (iris) state, focus state, focus motor speed, zoom ring position, etc.) for adjustment output from the AF microprocessor (IC613 on the DI-24P board) into a 2-digit hexadecimal code and displays it on the LED.

Connections:
Connect as shown in the diagram below.

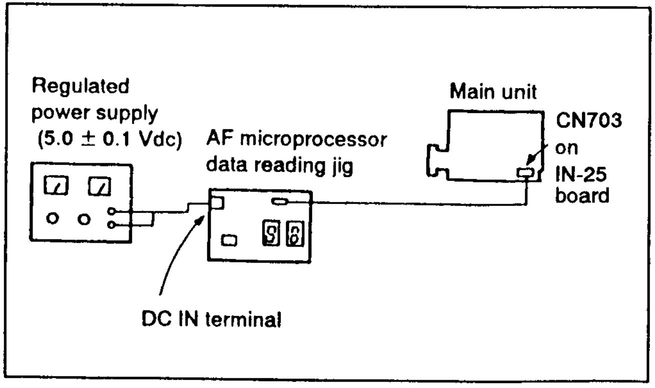

Regulated
power supply
(5.0 ± 0.1 Vdc)
AF microprocessor
data reading jig
Main unit
CN703
on
IN-25
board
DC IN terminal

Fig. 7-9.

### 7-1-7. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microprocessor data reading jig and adjustment remote controller is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal-decimal conversion table is shown in Table 7-5.

Hexadecimal-Decimal Conversion Table

| Hexadecimal lower digit / Hexadecimal upper digit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A<br>( A ) | B<br>( b ) | C<br>( c ) | ②<br>D<br>( d ) | E<br>( E ) | F<br>( F ) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 1 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| 2 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| 3 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
| 4 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| 5 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| 6 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| 7 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| 8 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| 9 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 |
| A( A ) | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 |
| ① → B( b ) | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 |
| C( c ) | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| D( d ) | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 |
| E( E ) | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| F( F ) | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 |

**Note:** ( ) is the indication on the jig or adjustment remote controller.

**Example:** The indication on the jig or adjustment remote commander is BD ( b d ).
As the upper digit is B ( b ) and the lower digit is D ( d ), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 7-5.

## 7-2. CAMERA SYSTEM ADJUSTMENT

### 7-2-1. Flange Back Adjustment

| | |
|---|---|
| Subject | Siemens star (2m directly in front of lens reference plane (CCD imager)) |
| Measurement Point | Check with a monitor TV |
| Measuring Instrument | |
| Adjusting Element | Flange back adjusting pin |
| Tools | Phillips screwdriver, flat blade (–) screwdriver |

Adjustment method:

1) Press the FOCUS switch (S883 on the FK-13 board) to set to the MANUAL mode.
2) Position a Siemens star 2m directly in front of the lens reference plane (See Fig. 7-2.).
3) Orient the camera block to have the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the lens zoom lever to both its extreme WIDE position (11 mm) and TELE position (66 mm), and then set it at the extreme WIDE position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 07. (Iris open mode) At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focusing mark at the center of "2".

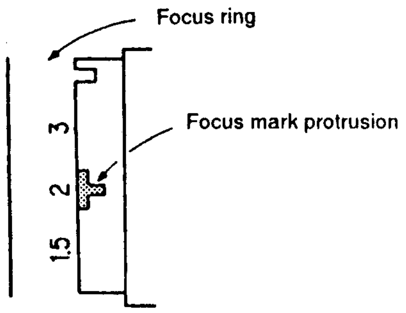


Fig. 7-10.

7) Loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 7-12.)
8) By turning the flange back adjusting pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few turns to the left and right to ensure optimum definition.)
   **Note:** Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting pin ❷ to prevent further rotation, retighten the flange back setscrew ❶.
10) With the zoom lever fixed at its WIDE end, turn the focusing ring and set it to the position that provides the optimum definition image of the wedge. Check to assure the focusing mark protrusion position is within the range shown in Fig. 7-11. Also, rotate the focusing ring to the close (1.1m) and far ( ∞ ) extremes and confirm that the wedge is no longer in focus.

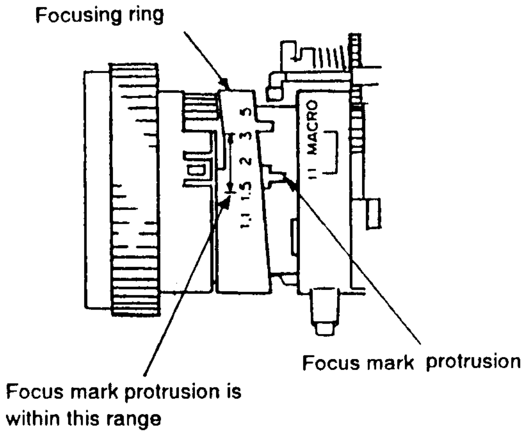


Fig. 7-11.

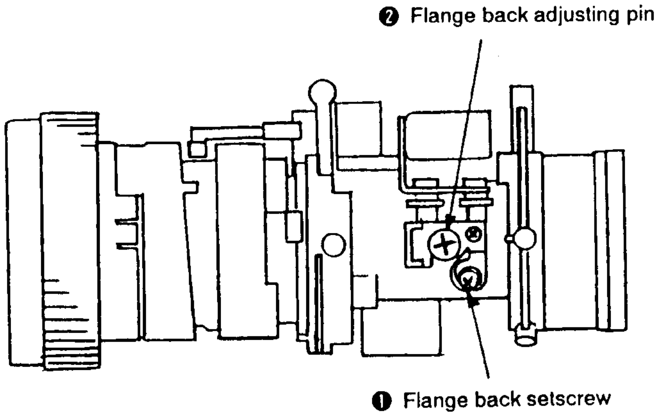


Fig. 7-12.

11) Fix the zoom lever at the extreme TELE position.
12) Turn the focusing ring and stop at the position where the wedge has optimum definition.
    Confirm that the focus mark is within ± 1.5 mm of "2".
13) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 00. (Iris normal)
14) Change the adjustment address to store the adjustment data in the memory.

### 7-2-2. Power Supply Check (IN-25 Board)

| Measuring Instrument | Digital voltmeter |
|---|---|
| CAM 5V Check | |
| Measurement Point | Pin ⑦ of W701 |
| Specified Value | 4.9 $^{+0.1}_{-0.07}$ Vdc |
| 15V Check | |
| Measurement Point | Pin ⑤ of W701 |
| Specified Value | 15.0 ± 0.45 Vdc |
| − 9V Check | |
| Measurement Point | Pin ⑥ of W701 |
| Specified Value | − 9.0 ± 0.5 Vdc |
| SS5V, EVER 5V Check | |
| Measurement Point | Pin ①, ② of CN701 |
| Specified Value | 5.0 ± 0.5 Vdc |
| EVF 5V Check | |
| Measurement Point | Pin ① of CN709 |
| Specified Value | 5.0 ± 0.1 Vdc |

Checking method:

1) Each power supply voltage should be at its specified level.

### 7-2-3. EVR Initial Settings

Set to the following initial settings of the adjustment data only when the EVR/AWB microprocessor (IC361 on the DI-24P board) was replaced.

| Adjustment Address | Adjustment Data Initia Value | Adjustment Address | Adjustment Data Initia Value | Adjustment Address | Adjustment Data Initia Value |
|---|---|---|---|---|---|
| 01 (DELTA R) | 50 | 43 (THR UP) | 00 | 67 (KEIKO R) | 10 |
| 02 (DELTA B) | 50 | 44 (STEP) | 00 | 68 (KEIKO B) | 00 |
| 04 (C-PED) | A0 | 47 (HANT LIMIT) | 02 | 69 (BTM UP) | 89 |
| 16 ( BURST LEVEL) | B0 | 48 (FA BASE) | 28 | 70 (BTM DWN) | 61 |
| 17 (HUE CONT) | B0 | 49 (INCLINE) | 06 | 71 (MDL UP) | 7C |
| 18 (SYNCL KEVEL) | A0 | 50 (TOP CHECK-THR) | 00 | 72 (MDL DWN) | 6A |
| 19 (SET UP) | A7 | 51 (BACK RUSH) | 02 | 75 (KEIKO DWN) | 8C |
| 20 (WC) | FF | 52 (TOPCHECK-SEARCH) | 02 | 76 (R DWN LMT) | 1E |
| 21 (Y LEVEL) | 41 | 53 (TOP LIMIT) | 05 | 82 (BMDIV) | 23 |
| 25 (IRIS) | FF | 54 (FOCUS FG) | 01 | 83 (D TM) | 10 |
| 28 (MAX GAIN) | B0 | 55 (TOP CHECK COUNTER) | 02 | 84 (F TM) | 20 |
| 29 (AGC) | FF | 56 (MODE 1 THR) | 04 | 85 (CAM DDS O) | 00 |
| 30 (V SUB) | 40 | 59 (START R) | 30 | 86 | 00 |
| 38 (LLA) | 3F | 60 (START B) | 41 | 87 | 00 |
| 39 (MACRO) | 00 | 61 (BTM SLP R) | 22 | 88 (CAM ALN) | 00 |
| 40 (IN/OUT DOOR) | 00 | 62 (BTM SLP B) | 10 | 89 (AWB MODE) | 00 |
| 41 (LOW CONT) | 03 | 63 (MDL SLP) | 00 | | |
| 42 (BASE H) | 03 | 64 (MDL SLP B) | 00 | | |

Table 7-6.

Adjustment method:

1) Set the RV701 (HALL ADJ) on the LD-20P board to the mechanical center.
2) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote controller.
3) Change the adjustment address to store the last adjustment data in the memory.

### 7-2-4. V SUB Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Not needed |
| Measurement Point | Pin (B4) (V SUB) of check point array |
| Measuring Instrument | Digital voltmeter |
| Adjustment Address | 30 (V SUB) |
| Specified Value | (Voltage indicated by the imager) ± 0.05 Vdc |

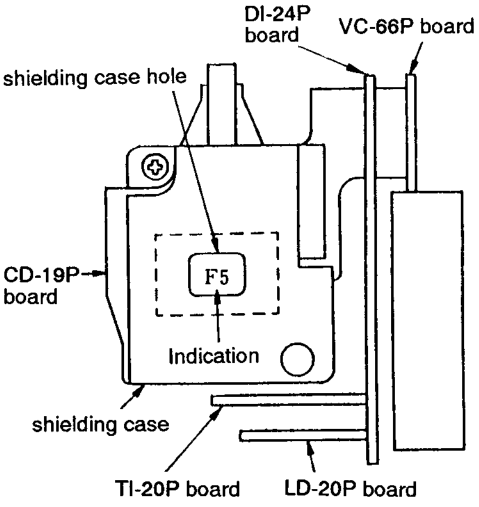
Adjustment method:

1) Set the adjustment address to 30 using the adjustment remote controller.
2) Change the adjustment data using the adjustment remote controller to set the VSUB voltage to (Voltage indicated by the imager) ± 0.05 Vdc.
3) Change the adjustment address to store the adjustment data in the memory.

**Note:** The VSUB specified voltage is expressed by two digits with the integer section abbreviation and decimal section by the imager.

Remove TI-20P board (CN803 on the VC-66P board) befor confirming the $V_{SUB}$ specified voltage.

| Integer section abbreviation | Integer value |
|---|---|
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| A | 10 |
| B | 11 |
| C | 12 |
| D | 13 |
| E | 14 |
| F | 15 |
| G | 16 |
| H | 17 |
| I | 18 |
| J | 19 |



(Example)
If F5 is indicated, the integer value is F → 15 and decimal value is 5 → 0.5.
Thus, the **VSUB** voltage is 15 + 0.5 = 15.5 (Vdc).

Fig. 7-13.

### 7-2-5. PLL Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Not needed |
| Measurement Point | R152 side terminal of C152 or Pin ⑳ on the IC141 |
| Measuring Instrument | Digital voltmeter |
| Adjustment Element | CT142 |
| Specified Value | 2.5 ± 0.1 Vdc |

Adjustment method:

1) Adjust to 2.5 ± 0.1 Vdc with CT142.

### 7-2-6. Hall Adjustment (LD-20P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | CN703 on the IN-25 board |
| Measuring Instrument | AF microprocessor data reading jig |
| Adjusment Address | 27 (Hall Offset) |
| Adjusting Element | RV701 |
| Specified Value | When iris closed: Minimum value of 01 to 04<br>When iris open: 3D or 3E |

Adjustment method:

1) Set the adjustment address to 37 with the adjustment remote controller, and set the adjustment data to 05. (Setting when iris closed)
2) Change the adjustment address to 27.
3) Change the adjustment data until the indication on the AF microprocessor data reading jig is the minimum value in the range of 01 to 04. (Hall offset adjustment)
4) Change the adjustment address to 37 and set the adjustment data to 07. (Setting when iris open)
5) Adjust RV701 until the indication on the AF microprocessor data reading jig is either 3D or 3E. (3D is indicated as 3d .)
6) Repeat steps 1) through 5) until the specified values are satisfied.
7) Set the adjustment address to 37 and set the adjustment data to 00. (Releases adjustment mode)
8) Change the adjustment address to store the adjustment data in the memory.

### 7-2-7. Iris Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Filter | ND filter 0.4 (two) |
| Measurement Point | Pin(B11)(CCD OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 25 (Iris) |
| Specified Value | 360 ± 20 mVp-p |

Adjustment method:

1) Set the adjustment address to 25 with the adjustment remote controller.
2) Without attaching an ND filter, change the adjustment data with the adjustment remote controller to set the IRIS OUT signal level to 360 ± 20 mVp-p.
3) Attach the ND filter 0.8 (0.4 + 0.4) to the front of the lens and confirm that there is a smooth change in the signal level.
4) Remove the ND filter and confirm that the signal level is 360 ± 25 mVp-p.
5) Repeat 2) through 4) if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

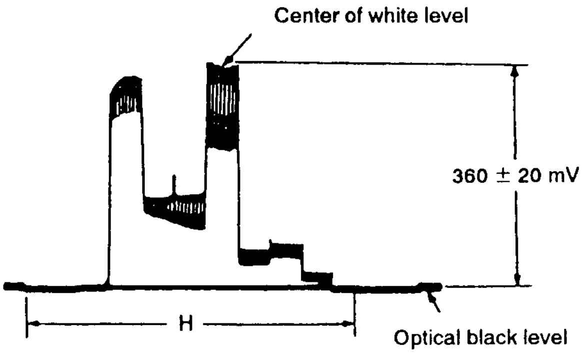


Fig. 7-14.

### 7-2-8. Iris In/Out Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | ND filter 0.4 (two) and 0.1 (one) |
| Measurement Point | CN304 |
| Measuring Instrument | AF microprocessor data reading jig |
| Adjustment Address | 46 (hall level)<br>45 (hysteresis) |

Adjustment method:

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Set the adjustment address to 37 with the adjustment remote controller and set the adjustment data to 09. (Hall in/out threshold mode setting)
3) Read the data indicated on the AF microprocessor data reading jig. This data will be a.
4) Change the adjustment address to 46 and enter a as the adjustment data.
5) Remove the ND filter 0.8 and replace it with ND filter 0.5 (0.4+0.1).
6) Read the data indicated on the AF microprocessor data reading jig. This data will be b.
7) Subtract data b from data a to obtain data c.
   (Refer to Table 7-5. Hexadecimal-Decimal Conversion Table)
   (Example)
   If a=1A and b=15, c=a−b =1A (26) − 15 (21) =05
   ( ) indicates decimal value
8) Obtain the hysteresis data from data c using the table below.

| Data c | Hysteresis Data |
|---|---|
| 02, 03 | 01 |
| 04, 05, 06 | 02 |
| 07, 08, 09 | 03 |

   (Example)
   The hysteresis data is 02 if c=05.
9) Change the adjustment address to 45 and enter the hysteresis data as the adjustment data.
10) Change the adjustment address to 37 and set the adjustment data to 00.
    (Releases hall in/out threshold mode)
11) Change the adjustment address to store the adjustment data in the memory.

### 7-2-9. AGC Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (B3) (Y (LPF) OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 29 (AGC) |
| Specified Value | 160 ± 5 mVp-p |

Adjustment method:

1) Set the adjustment address to 29 using the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the Y (LPF) signal level to 160 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

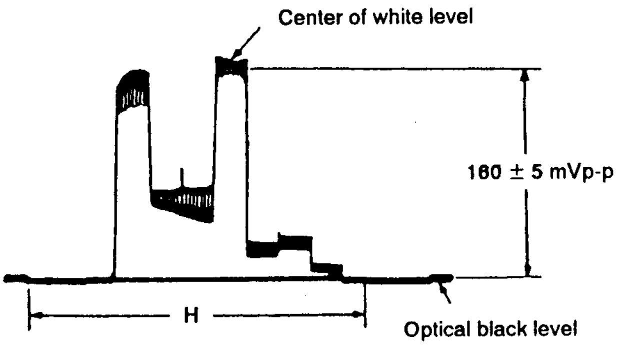


Fig. 7-15.

### 7-2-10. Y Signal Matrix Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Measurement Point | 1: Pin (A4) (Y0) of check point array<br>2: Pin (A5) (Y1) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 14 (Y1 GAIN) |
| Specified Value | Y1 signal level=Y0 signal level |

Adjustment method:

1) Connect the oscilloscope to Pin (A4) of the check point array and measure the Y0 signal level.
2) Connect the oscilloscope to Pin (A5) of the check point array.
3) Set the adjustment address to 14 using the adjustment remote controller.
4) Change the adjustment data until the Y1 signal level is the same as the Y0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

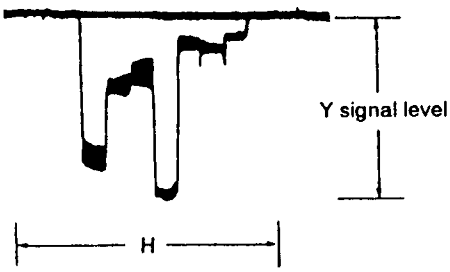


Fig. 7-16.

### 7-2-11. Chroma Signal Matrix Adjustment (1) (VC-66P Board)

| Subject | Color bar standard picture frame |
|---|---|
| Measurement Point | 1: Pin (A6) (C0) of check point array<br>2: Pin (A7) (C1) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 13 (C1 GAIN) |
| Specified Value | C1 signal level=C0 signal level |

Adjustment method:

1) Connect the oscilloscope to Pin (A6) of the check point array and measure the C0 signal level. (The C0 signal level is the larger of the CR and CB signal levels.)
2) Connect the oscilloscope to Pin (A7) of the check point array.
3) Set the adjustment address to 13 using the adjustment remote controller.
4) Change the adjustment data until the C1 signal level is the same as the C0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

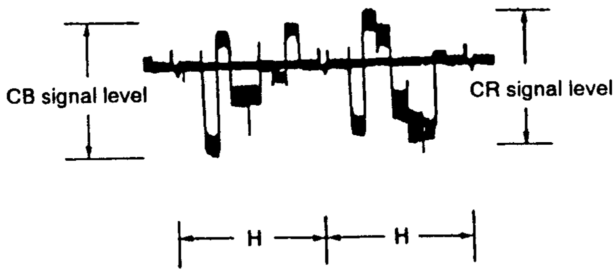


Fig. 7-17. C0 and C1 signal levels

### 7-2-12. Chroma Signal Matrix Adjustment (2) (VC-66P Board)

| Subject | Color bar standard picture frame |
|---|---|
| Measurement Point | CH1 (X): emitter of Q257 (B-Y)<br>CH2 (Y): emitter of Q255 (R-Y) |
| Measuring Instrument | Oscilloscope (X-Y mode) |
| Adjustment Address | 24 (C2 GAIN) |
| Specified Value | Separate color luminance points become one. |

**Note:** Adjustment can be made in the same manner using a vectorscope.
(Vectorscope connection terminal: Pin ③ (VIDEO OUT) of CN706 on the IN-25 board)

Adjustment method:

1) Set the adjustment address to 24 using the adjustment remote controller.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

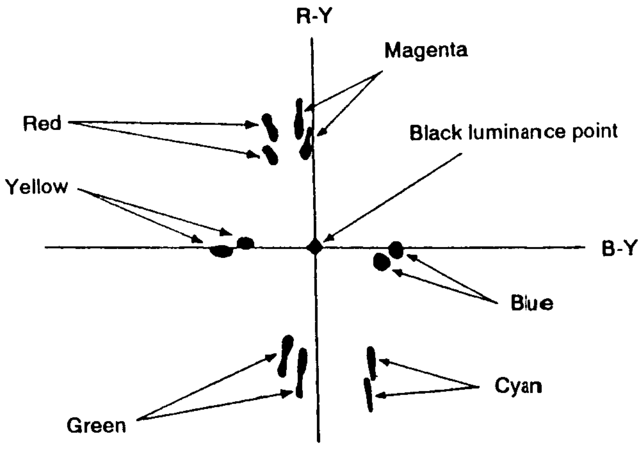


Fig. 7-18.

### 7-2-13. YH Level Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (A9) (YH) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 23 (YH LEVEL) |
| Specified Value | 900 ± 40 mVp-p |

Adjustment method:

1) Set the adjustment address to 23 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the YH signal level to 900 ± 40 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

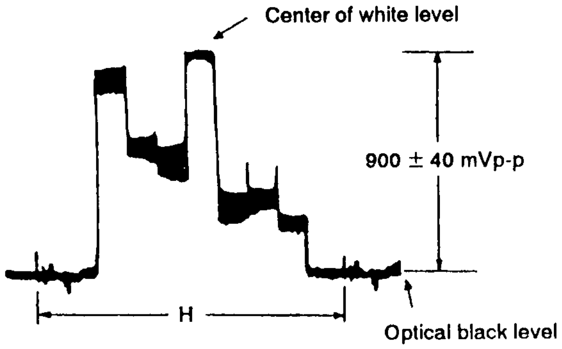


Fig. 7-19.

### 7-2-14. Sync Level Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin ③ (VIDEO OUT) of CN706 on the IN-25 board |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 18 (SYNC LEVEL) |
| Specified Value | 150 ± 5 mVp-p |

Adjustment method:

1) Set the adjustment address to 18 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the sync level to 150 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

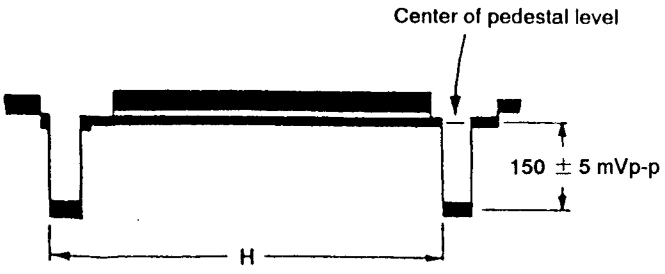


Fig. 7-20.

### 7-2-15. Setup Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin ③ (VIDEO OUT) of CN706 on the IN-25 board |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 19 (SET UP) |
| Specified Value | 15 ± 5 mV |

**Note:** 1), 2) and 3) are steps taken to reduce noise.

Adjustment method:

1) Set the address to 22 (APERTURE) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
2) Set the address to 28 (MAX GAIN) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Set the adjustment address to 21 (Y LEVEL) with the adjustment remote controller, and enter 90 as the adjustment data after making a note of the adjustment data for this address.
4) Set the adjustmenyt address to 19 with the adjustment remote controller.
5) Change the adjustment data with the adjustment remote controller to set the setup level to 15 ± 5 mV.
6) Set the adjustment address to 22 and enter the adjustment data recorded in 1).
7) Set the adjustment address to 28 and enter the adjustment data recorded in 2).
8) Set the adjustment address to 21 and enter the adjustment data recorded in 3).
9) Change the adjustment address to store the adjustment data in the memory.

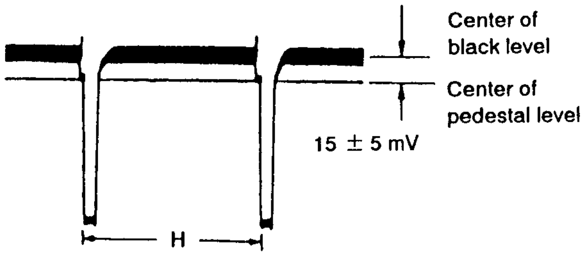


Fig. 7-21.

### 7-2-16. Y Level Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin ③ (VIDEO OUT) of CN706 on the IN-25 board |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 21 (Y LEVEL) |
| Specified Value | 305 ± 5 mV |

Adjustment method:

1) Set the adjustment address to 20 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote controller.
3) Set the adjustment address to 21 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the Y signal level to 305 ± 5 mV.
5) Set the adjustment address to 20 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

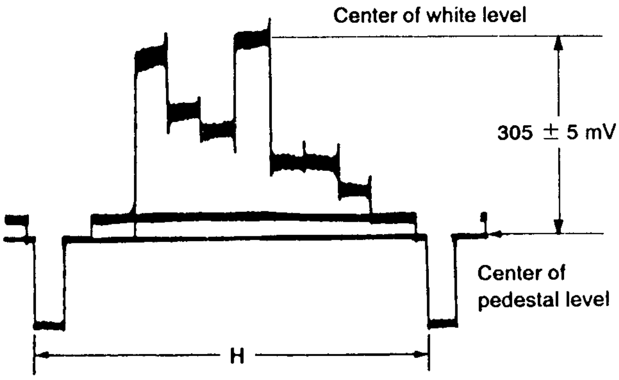


Fig. 7-22.

### 7-2-17. White Clip Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | High luminance pattern |
| Measurement Point | Pin ③ (VIDEO OUT) of CN706 on the IN-25 board |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 20 (WHITE CLIP) |
| Specified Value | 420 ± 20 mV |

Adjustment method:

1) Set the adjustment address to 21 with the adjustment remote commander, and make a note of the adjustment data for this address.
2) Set the adjustment data to 40 with the adjustment remote commander.
3) Set the adjustment address to 20 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the white clip level to 420 ± 20 mV.
5) Set the adjustment address to 21 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

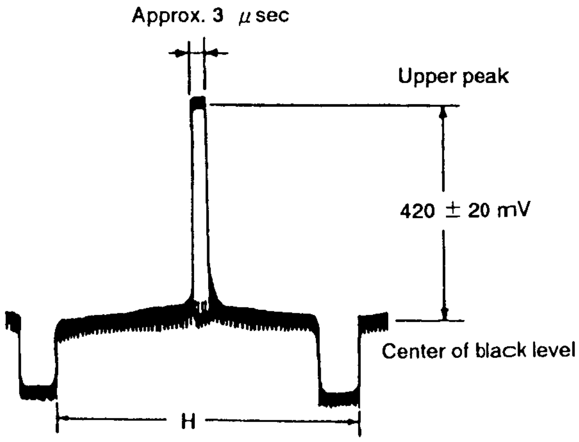


Fig. 7-23.

### 7-2-18. Aperture Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (A8) (CAM Y) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 22 (APERTURE) |
| Specified Value | 240 ± 10 mV |

Adjustment method:

1) Set the adjustment address to 22 with the adjustment remote controller.
2) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
3) Change the adjustment data to set the lower peak between green and white to 240 ± 10 mV above the pedestal level.
4) Change the adjustment address to store the adjustment data in the memory.

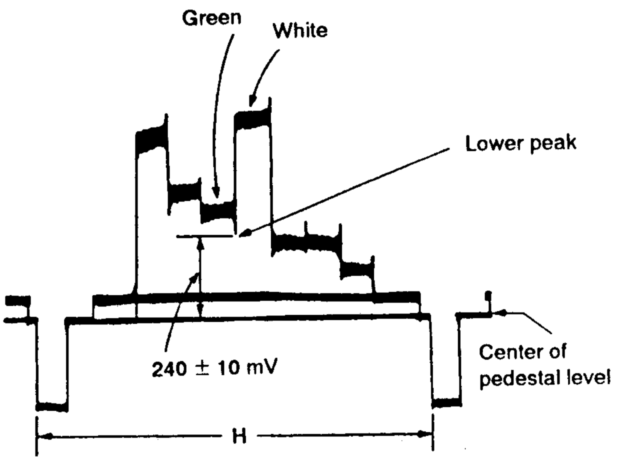


Fig. 7-24.

### 7-2-19. Max. Gain Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Filter | ND filters 1.0 (two) and 0.3 (one) |
| Measurement Point | Pin ③ (VIDEO OUT) of CN706 on the IN-25 board |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 28 (MAX GAIN) |
| Specified Value | 180 ± 5 mV |

Adjustment method:

1) Cover the lens with the ND filter 2.3 (1.0 + 1.0 + 0.3).
2) Set the adjustment address to 28 with the adjustment remote controller.
3) Change the adjustment data with the adjustment remote controller to set the Y signal level to 180 ± 5 mV.
4) Change the adjustment address to store the adjustment data in the memory.

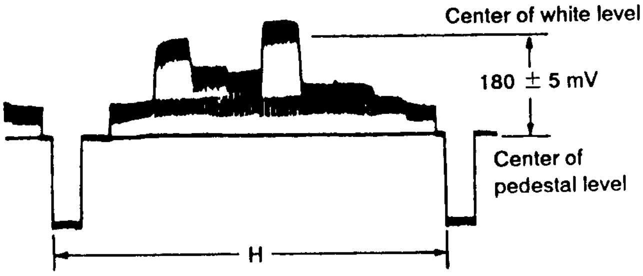


Fig. 7-25.

### 7-2-20. Chroma Level Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (A1) (G OUT CHK) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 09 (C LEVEL) |
| Specified Value | 320 ± 20 mVp-p |

Connections:

1) Connect Pin (B7) (MODE) of the check point array to GND using a jamper wire.

Adjustment method:

1) Set the adjustment address to 09 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the G OUT signal level to 320 ± 20 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

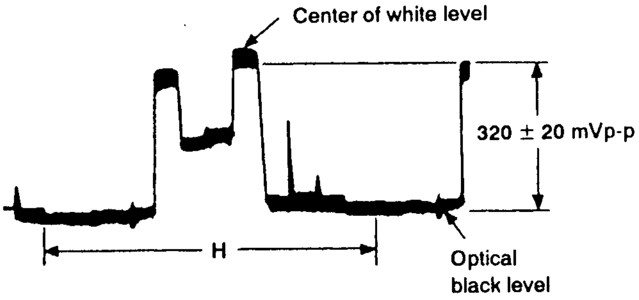


Fig. 7-26.

### 7-2-21. Burst Level Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin (A10) (CAM C) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 16 (BURST LEVEL) |
| Specified Value | 145 ± 5mVp-p |

Adjustment method:

1) Set the adjustment address to 16 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the burst level to 145 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

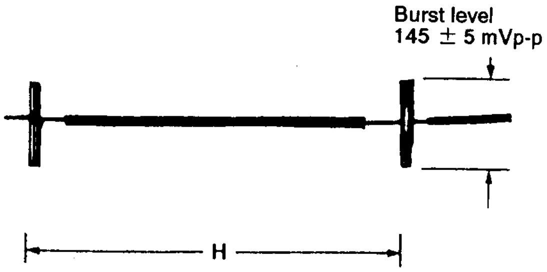


Fig. 7-27.

### 7-2-22. Indoor White Balance Adjustment (Method Using Vectorscope) (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin ③ (VIDEO OUT) of CN706 on the IN-25 board |
| Measuring Instrument | Vectorscope |
| Adjustment Address | 11 (R GAIN)<br>12 (B GAIN) |
| Specified Value | The center of the white luminance point is within a circle with a diameter of 1 mm centered around the origin. |

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to move the white luminance point to the origin point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the origin point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

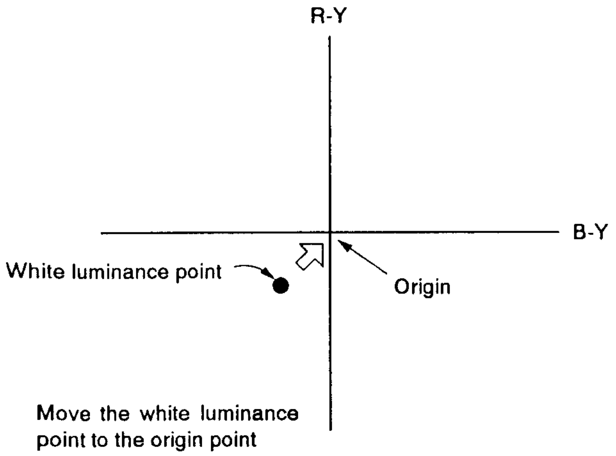

R-Y
B-Y
White luminance point
Origin
Move the white luminance point to the origin point

Fig. 7-28.

### 7-2-23. Indoor White Balance Adjustment (Method Using Oscilloscope) (VC-66P Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | CH1 (X): emitter of Q257 (B-Y)<br>CH2 (Y): emitter of Q255 (R-Y) |
| Measuring Instrument | Oscilloscope (X-Y mode) |
| Adjustment Address | 11 (R GAIN)<br>12 (B GAIN) |
| Specified Value | Move the white luminance point to the black luminance point. |

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to move the white luminance point with the black luminance point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the black luminance point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

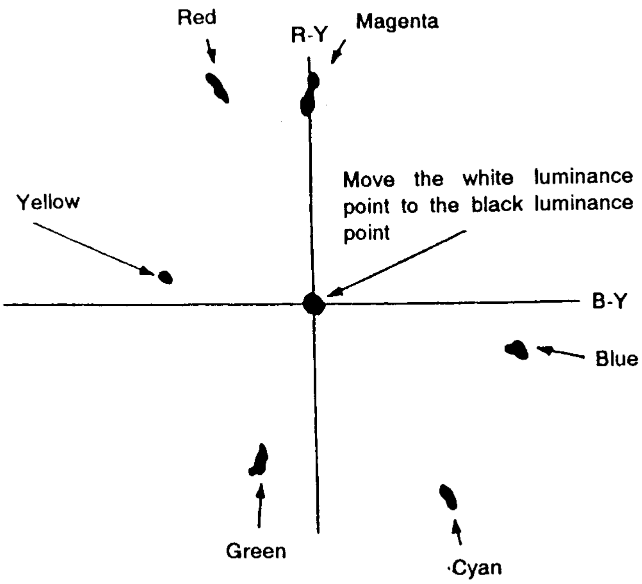

Red
R-Y
Magenta
Yellow
Move the white luminance point to the black luminance point
B-Y
Blue
Green
Cyan

Fig. 7-29.

### 7-2-24. Color Reproduction Adjustment (Method Using Vectorscope) (VC-66P Board)

| Subject | Color bar chart standard picture frame |
|---|---|
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Address | 05 (R-Y GAIN)<br>06 (B-Y GAIN)<br>07 (B-Y HUE)<br>08 (R-Y HUE) |
| Specified Value | All color luminance points are within color reproduction frame. |

**Note:** Confirm that Burst Level Adjustment and Indoor White Balance Adjustment have been completed.

**Note: Use the color reproduction chart for CCD-TR55E.**

Adjustment method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Change the adjustment data at the various adjustment addresses using the adjustment remote controller until all color luminance points are within the color reproduction frame.
3) Change the adjustment address to store the adjustment data in the memory.

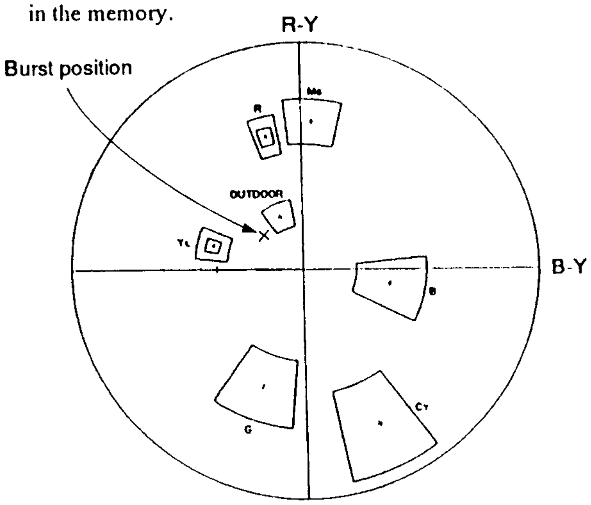


Fig. 7-30

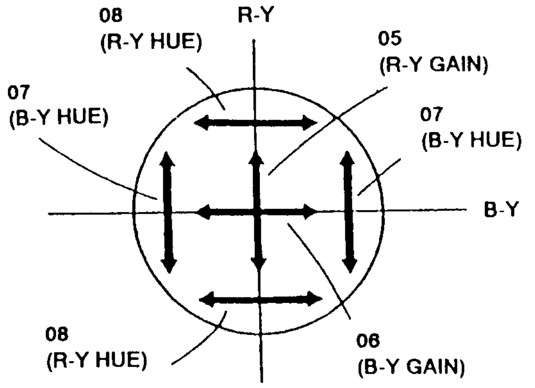


Fig. 7-31. Adjustment Address and Direction of Luminance Point Movement

### 7-2-25. Color Reproduction Adjustment (Method Using Oscilloscope)

#### 1. Gain adjustment (VC-66P board)

| Subject | Color bar chart standard picture frame |
|---|---|
| Measurement Point | Pin A10 (CAM C) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 05 (R-Y GAIN)<br>06 (B-Y GAIN) |
| Specified Value | Red level: 285 ± 15 mVp-p<br>Yellow level: 190 ± 12 mVp-p |

**Note:** Confirm that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Set the adjustment address to 06 with the adjustment remote controller and set the adjustment data to B0.
2) Set the adjustment address to 07 and set the adjustment data to C0.
3) Set the adjustment address to 08 and set the adjustment data to C0.
4) Set the adjustment address to 05 and change the adjustment data to set the chroma signal red level to 285 ± 15 mVp-p
5) Set the adjustment address to 06 and change the adjustment data to set the chroma signal yellow level to 190± 12 mVp-p
6) Repeat steps 4) and 5).
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform Hue Adjustment.

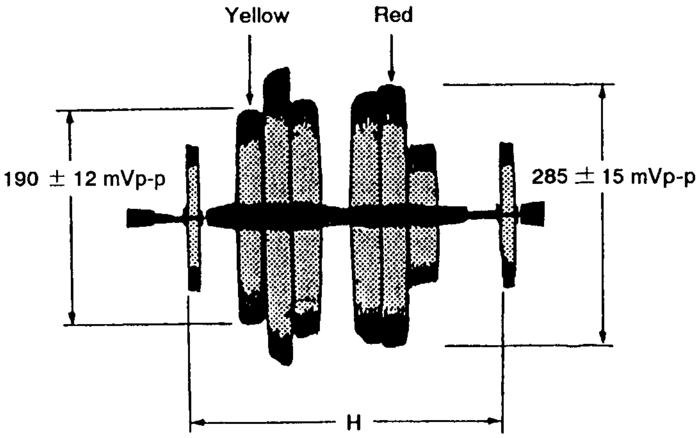


Fig. 7-32.

### 2. Hue adjsutment (VC-66P board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | CH1 (X): emitter of Q257 (B-Y)<br>CH2 (Y): emitter of Q255 (R-Y) |
| Measuring Instrument | Oscilloscope (X-Y mode) |
| Adjustment Address | 07 (B-Y HUE)<br>08 (R-Y HUE) |
| Specified Value | Various color luminance points within color reproduction frame. |

**Note:** Make sure that Indoor White Balance Adjustment has been completed.

**Note: Use the color reproduction chart for CCD-TR55E.**

Adjustment method:

1) Move the black luminance point on the oscilloscope to the origin point of the color reproduction frame.
2) Change the adjustment data at adjustment addresses 07 and 08 with the adjustment remote controller to bring the various color luminance points into the color reproduction frame.
3) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 07 and 08 if necessary.
4) Change the adjustment address to store the adjustment data in the memory.

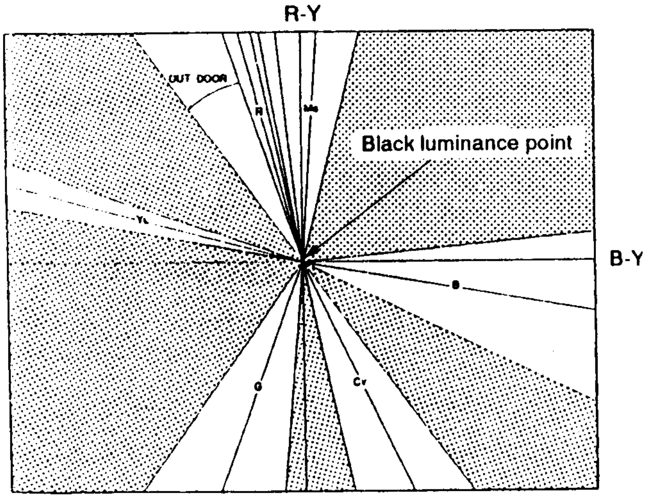


Fig. 7-33.

### 7-2-26. Auto White Balance Adjustment

**Note:** Be sure to first perform Preset Adjustment followed by Auto White Balance Adjustment.

### 1. Preset adjustment (VC-66P board)

| | |
|---|---|
| Subject | White pattern standard picture frame |

**Note:** 1) Perform preset adjustment after supplying power to the unit for at least 30 seconds.
2) When performing preset adjustment again, repeat after first turning the power off and then back on.

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (B5) (AW ADJ) of the check point array and Pin ④ (CAM 5V) of W801.

Adjustment method:

1) Turn the power OFF and then ON.
2) Select adjustment address 89 (AWB MODE) and set the adjustment data to E0. Wait at least five seconds.
3) Change the adjustment address to store the adjustment data in the memory.
4) Turn off the switch on the extention cord (J-6082-084-A) for the adjustment remote controller.
5) Connect Pin (B5) (AW ADJ) of the check point array and Pin ④ of W801 (CAM 5V) with a 1k Ω resistor.
6) Turn on the switch on the extention cord for the adjustment remote controller.
7) Confirm that the indication (adjustment address 01) of the adjustment remote controller is changed.
8) Turn off the switch on the extention cord for the adjustment remote controller after allowing one second or more to pass.
9) Remove the 1 kΩ resistor connected to Pin (B5) (AW ADJ) of the check point array.
10) Turn on the switch on the extention cord for the adjustment remote controller.

## 2. Auto white balance adjustment (VC-66P board)

**Note:** Be sure to perform this adjustment after completing Preset Adjustment.

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | Filter C14 (C12+C2) for color temperature correction |
| Measuring Instrument | Oscilloscope (X-Y Mode) |
| Measurement Point | CH1 (X): emitter of Q257 (B-Y)<br>CH2 (Y): emitter of Q255 (R-Y) |
| Adjustment Address | 01 (DELTA R)<br>02 (DELTA B)<br>80 (R OUTDOOR)<br>81 (B OUTDOOR)<br>77 (B UP LIMIT)<br>78 (R OUT LIMIT)<br>79 (B OUT LIMIT)<br>65 (TOP SLP R)<br>66 (TOP SLP B)<br>73 (TOP UP)<br>74 (TOP DWN) |
| Specified Value | Line up the white luminance point with the black luminance point. |

**Note:** 1) Make connection to Pin ③ (VIDEO OUT) of CN706 on the IN-25 board the vectorscope is used.
2) All calculations in this section are made in decimal.

Adjustment method:

1) Select adjustment address 89 (AWB MODE) with the adjustment remote controller and enter adjustment data of 10.
2) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote controller to move the white luminance point to the black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
The adjustment data of adjustment address 01 is D1 and the adjustment data of adjustment address 02 is D2.
3) Convert adjustment data D1 to decimal to obtain D1'.
Convert adjustment data D2 to decimal to obtain D2'.
(See Table 7-5. Hexadecimal-Decimal Conversion Table)
4) Obtain D80' and D81' by the following formulas.
D80'=D1'+1
D81'=D2'+3
5) Convert D80' and D81' to hexadecimal and call these values D80 and D81.
6) Select adjustment address 80 with the adjustment remote controller and enter adjustment data D80.
7) Select adjustment address 81 with the adjustment remote controller and enter adjustment data D81.
8) Obtain D77' by the following formula.
D77'=(D2' × 1.9) -43.2
9) Convert D77' to hexadecimal and call this value D77.
(Round off the decimal portion)
10) Select adjustment address 77 with the adjustment remote controller and enter adjustment data D77.
11) Select adjustment address 78 with the adjustment remote controller and enter adjustment data D1.
12) Obtain D79' by the following formula.
D79'=D2'+10
13) Convert D79' to hexadecimal and call this value D79.
14) Select adjustment address 79 with the adjustment remote controller and enter adjustment data D79.
15) Obtain d' by the following formula.
d'=(D1' × 5) + D2'
The adjustment procedure in 16) through 18) varies according to the value of d'.

**[d' > 308]**

16) Obtain D73' and D74' by the following formulas.
D73'=(D1' × 3) + (D2' ÷ 2) + 30
D74'=D73'- 42
17) Convert D73' and D74' to hexadecimal and call these values D73 and D74.
(Round off the decimal portion)
18) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

| Adjustment address | Adjustment data |
|---|---|
| 65 | 20 |
| 66 | 01 |
| 73 | D73 |
| 74 | D74 |

Perform the adjustment steps beginning from 19).

**[308 ≧ d' ≧ 286]**

16) Obtain D73' and D74' by the following formulas.
D73'=(d' ÷ 2) +25
D74'=D73'-39
17) Convert D73' and D74' to hexadecimal and call these values D73 and D74.
(Round off the decimal portion)
18) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

| Adjustment address | Adjustment data |
|---|---|
| 65 | 41 |
| 66 | 01 |
| 73 | D73 |
| 74 | D74 |

Perform the adjustment steps beginning from 19).

**[286 > d']**

16) Obtain $D_{73}'$ and $D_{74}'$ by the following formulas.
$D_{73}'=(D_1' \times 3)+D_2'+30$
$D_{74}'=D_{73}'-42$
17) Convert $D_{73}'$ and $D_{74}'$ to hexadecimal and call these values $D_{73}$ and $D_{74}$. (Round off the decimal portion)
18) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

| Adjustment address | Adjustment data |
|---|---|
| 65 | 20 |
| 66 | 00 |
| 73 | $D_{73}$ |
| 74 | $D_{74}$ |

19) Select adjustment address 89 and enter adjustment data 00.
20) Select adjustment address 89 and enter adjustment data F0.
21) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote controller to move the white luminance point to the black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
22) Select adjustment address 89 and enter adjustment data of 00.
23) Change the adjustment address to store the adjustment data in the memory.

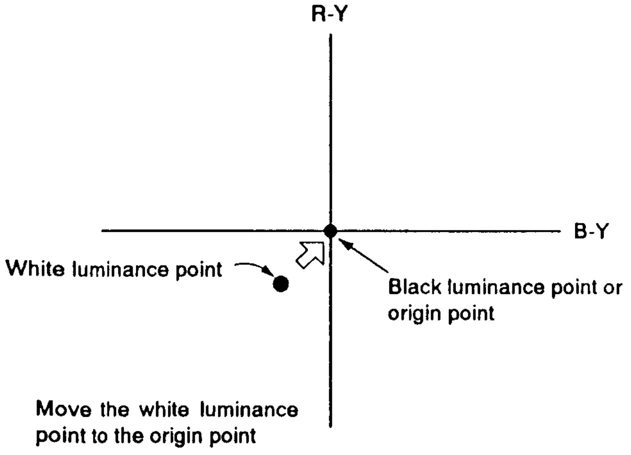

R-Y
B-Y
White luminance point
Black luminance point or origin point
Move the white luminance point to the origin point

Fig. 7-34.

(Example)
When the adjustment data obtained in Step 2) has the following values.

| Adjustment address | Adjustment data |
|---|---|
| 01 | 2A |
| 02 | 53 |

→ Enter into adjustment address 78

$D_1$=2A and $D_2$=53 when there is conversion to decimal using Table 7-5.
$D_1'=42$
$D_2'=83$

In the same manner,
$D_{77}'=(83 \times 1.9)-43.2=114.5$

Rounding off the decimal portion,
$D_{77}$=73 → Entered into adjustment address 77
Thus,
$D_{80}'=42+1=43$
$D_{81}'=83+3=86$
Converting to hexadecimal by Table. 7-5 results in,
$D_{80}$=2B → Entered into adjustment address 80
$D_{81}$=56 → Entered into adjustment address 81
$D_{79}'=(83+10)=93$
$D_{79}$=5D → Entered into adjustment address 79

In addition,
$d'=(42 \times 5)+83=293$

Thus, $[308 \geqq d' \geqq 286]$
$D_{73}'=(293 \div 2)+25=171.5$
$\therefore$ $D_{73}$=AC → Entered into adjustment address 73
$D_{74}'=171.5-39=132.5$
$\therefore$ $D_{74}$=85 → Entered into adjustment address 74

Also, adjustment data of 41 is entered into adjustment address 65, and adjustment data of 01 is entered into adjustment address 66.
The steps beginning from 19) are then performed.

### 7-2-27. Outdoor White Balance Confirmation (VC-66P Board)

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Measurement Point | When vectorscope used:<br>video input/output terminals<br>When oscilloscope used:<br>CH1 (X): emitter of Q257 (B-Y)<br>CH2 (Y): emitter of Q255 (R-Y) |
| Measuring Instrument | |
| Specified Value | See Fig. 7-35. |

Connections:

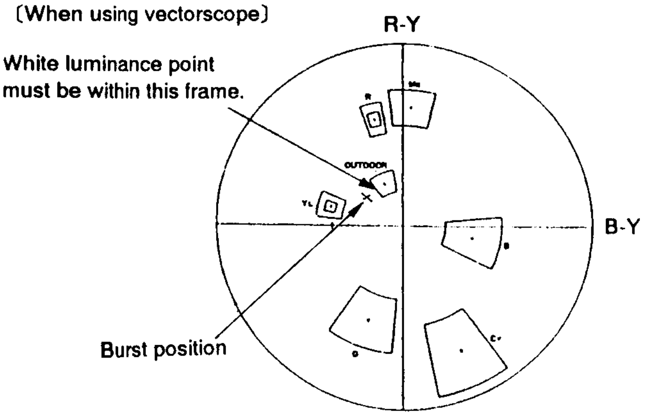
1) Turn off the switch on the extention coard (J-6082-084-A) for the adjustment remote controller. (Turns off the EVR adjustment mode)

Checking method:

1) Press the white balance button to select the outdoor white balance mode. (☀ mark is displayed on EVF screen.)
2) Confirm that the center of the white luminance point is within the OUTDOOR frame of the color reproduction frame.

   **Note:** When using a vectorscope, adjust the GAIN and PHASE of the vectorscope so that burst luminance point move to the burst position of the color reproduction frame.

(When using vectorscope)



(When using oscilloscope)

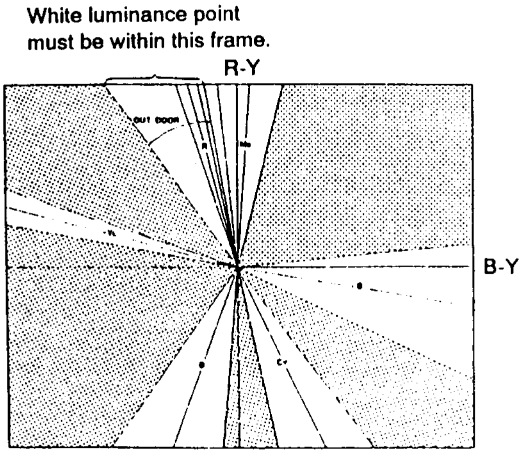


Fig. 7-35.

### 7-2-28. Focus Motor Speed Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Arbitrary |
| Measurement Point | CN703 on the IN-25 board |
| Measuring Instrument | AF microprocessor data reading jig |
| Adjustment Address | 26 (FOCUS SPEED) |
| Specified Value | Average value of data indicated on jig=7.0 ± 0.5 |

**Remarks:** The rotation time from the close extreme to far extreme of the focus ring should be approximately 2.1 seconds after completion of adjustment.

Adjustment method:

1) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 01. (Sets hunching mode)
2) Set the adjustment address to 26.
3) Change the adjustment data so that the indication on the AF microprocessor data reading jig is 07 while the ring is rotating.
4) Press the HOLD button of the AF microprocessor data reading jig while the focus ring is rotating to read the indication value.
5) Repeat step 4) ten times and obtain the average value.
   Specified value=7.0 ± 0.5
   Repeat steps 3) and 4) if the specified value is not satisfied.
6) Set the adjustment address to 37 and set the adjustment data to 00. (Releases hunching mode)
7) Change the adjustment address to store the adjustment data in the memory.

### 7-2-29. Macro Area Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | Arbitrary |
| Measurement Point | CN703 on the IN-25 board |
| Measuring Instrument | AF microprocessor data reading jig |
| Adjustment Address | 39 (MACRO) |
| Specified Value | (Value at zoom ring WIDE position) −1 |

Adjustment method:

1) Set the zoom ring to the WIDE position (11 mm position).
2) Select adjustment address 37 with the adjustment remote controller and set the adjustment data to 03. (Sets zoom position indication mode)
3) Read the data indicated on the AF microprocessor data reading jig. (Data in the range of 06 to 0E is displayed if normal.)
4) Change the adjustment address to 39.
5) Subtract 1 from the data read from the jig and enter as the adjustment data. (See Table 7-5. Hexadecimal-Decimal Conversion Table)
6) Change the adjustment address to 37 and set the adjustment data to 00. (Releases zoom position indication mode)
7) Change the adjustment address to store the adjustment data in the memory.

### 7-2-30. Auto-Focus LLA Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | CN703 on the IN-25 board |
| Measuring Instrument | AF microprocessor data reading jig |
| Adjustment Address | 38 (LLA) |
| Specified Value | (Value indicated on jig) −2 |

Adjustment method:

1) Select adjustment address 37 with the adjustment remote controller and set to 0B as the adjustment data. (Sets auto-focus LLA adjustment mode)
2) Read the data indicated on the AF microprocessor data reading jig and call this value D.
3) Subtract 2 from D and make this value the LLA data. (See Table 7-5. Hexadecimal-Decimal Conversion Table)

(Example)
When D=30 (48), LLA data is 2E (46)
When D=31 (49), LLA data is 2F (47)
( ) is decimal equivalent

4) Select adjustment address 38 with the adjustment remote controller and enter the LLA data as the adjustment data.
5) Select adjustment address 37 and set 00 as the adjustment data. (Releases auto-focus LLA adjustment mode)
6) Change the adjustment address to store the adjustment data in the memory.

### 7-2-31. Auto-Focus Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | CN703 on the IN-25 board |
| Measuring Instrument | AF microprocessor data reading jig |
| Adjustment Address | 42 (BASE-H) |

Adjustment method:

1) Turn off tha auto-focus with the FOCUS button (S883 on the FK-13 board).
2) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of FF.
3) Read the indication on the AF microprocessor data reading jig and call this value D.
4) Obtain adjustment data $D_{42}$ according to the following formulas.
   When D=0
   $D_{42}$=03
   When D > 0
   $D_{42}$=D+2 * Hexadecimal calculations
5) Select adjustment address 42 with the adjustment remote controller and enter $D_{42}$ as the adjustment data.
6) Select adjustment address 37 and enter adjustment data of 00.
7) Change the adjustment address to store the adjustment data in the memory.

### 7-2-32. Auto-Focus Confirmation

| | |
|---|---|
| Subject | Siemens star (position 1.5m from the front of the lens reference plane (CCD imager) |

**Note:** Perform adjustment with the EVF (electronic viewfinder) attached.

Measuring method:

1) Place the Siemens star 1.5m from the front of the lens reference plane (See Fig. 7-2.).
2) Set the zoom lever to the TELE position (66 mm) and turn on auto focus with the FOCUS button.
3) Adjust the position of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris, reduce the illumination of the Siemens star to the range in which the ■ mark in the upper center of the EVF screen does not light up. (Or cover lens with the ND filter)
5) Turn off the auto-focus with the FOCUS button.
6) Manually rotate the focus ring to set the focus. Confirm that the focus mark is inside the range shown in Fig. 7-36. at this time. Perform Flange Back Adjustment if this condition is not satisfied.
7) Rotate the focus ring to the close extreme (1.1m).
8) Turn on the auto-focus with the FOCUS button.
9) Confirm that there is focusing within two seconds and a sharp image can be obtained.
10) Turn off the auto-focus and rotate the focusring to the far extreme ( ∞ ).
11) Turn on the auto-focus.
12) Confirm that there is focusing within two seconds and a sharp image can be obtained.

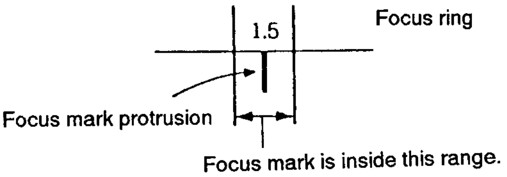


Fig. 7-36.

## 7-3. DIGITAL TITLER SYSTEM ADJUSTMENT

### 7-3-1. Titler PLL Adjustment (TI-20P Board)

| | |
|---|---|
| Subject | Arbitrary |
| Measurement Point | TP804 (VPLL) |
| Measuring Instrument | Digital voltmeter |
| Adjusting Element | CT801 |
| Specified Value | 2.5 ± 0.1 Vdc |

Connection:

1) Connect Pin (A8) (CAM Y) of check point array and Pin ④ (CAM 5V) of W801 with a jumper wire.

Adjusting method:

1) Adjust to 2.5 ± 0.1 Vdc with CT801.

### 7-3-2. CG Clock Adjustment (TI-20P Board)

| | |
|---|---|
| Subject | Arbitrary |
| Measurement Point | TP806 |
| Measuring Instrument | Frequency counter |
| Adjusting Element | CT802 |
| Specified Value | 6.38 ± 0.1 MHz |

Adjusting method:

1) Adjust to 6.38 ± 0.1 MHz with CT802.

### 7-3-3. Title A/D Level Adjustment

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Confirmed on monitor TV |
| Measuring Instrument | |
| Adjustment Address | 15 (TITLE A/D) |
| Specified Value | Blue and black areas are superimposed (become white).<br>Other areas do not change. |

**Note:** Make sure that "Y Level Adjustment" has been completed.

Adjustment method:

1) Select adjustment address 15 with the adjustment remote controller.
2) Press the MEMORY button (S891 on the FK-17 board).
3) Confirm that blue and black areas are superimposed and become white, and that red and magenta areas do not change.
4) If this condition is not satisfied, change the adjustment data with the adjustment remote controller and repeat steps 2) and 3).
5) Change the adjustment address to store the adjustment data in the memory.

Shaded area must change to white.

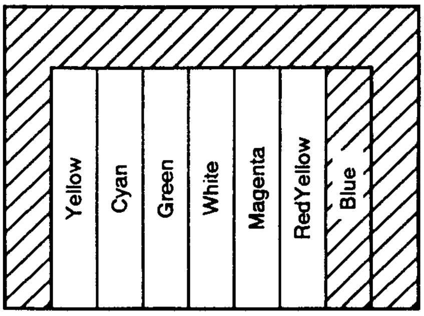


Fig. 7-37.

### 7-3-4. Title Pedestal Adjsutment (VC-66P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin (A10) (CAM C) of check point array or video input/output terminal |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 03 (PED) |
| Specified Value | 4.43 MHz minimum chroma component |

**Note:** Connect the EVF (electronic viewfinder) for adjustment.

Adjustment method:
1) Cover the lens with the black cap and press the MEMORY button (S891 on the FK-17 board).
2) Confirm that "T WHT" characters are displayed in the EVF. (If another color is indicated, press the COLOR button (S892 on the FK-17 board) unit "T WHT" is indicated.)
3) Select adjustment address 03 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the 4.43 MHz chroma component to minimum amplitude.
5) Change the adjustment address to store the adjustment data in the memory.

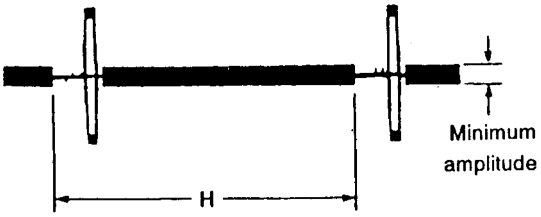


Fig. 7-38.

### 7-3-5. Title Y Level Adjustment (VC-66P Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin ③ (VIDEO OUT) of CN703 on the IN-25 board |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 10 (TITLE Y) |
| Specified Value | 250 ± 20 mV |

**Note:** Connect the EVF (electronic viewfinder) for adjustment.

Adjustment method:
1) Cover the lens with the black cap and press the MEMORY button (S891 on the FK-17 board).
2) Confirm that "T WHT" characters are displayed in the EVF.
3) Select adjustment address 10 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the Y signal level to 250 ± 20 mV.
5) Change the adjustment address to store the adjustment data in the memory.

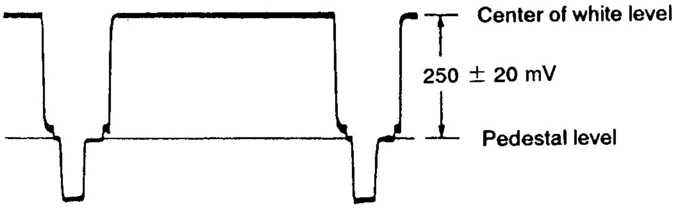


Fig. 7-39.

## 7-4. SYSTEM CONTROL SYSTEM ADJUSTMENT

### 7-4-1. System Clock Adjustment (DI-24P Board)

**Note:** Remove the lens for adjustment.

| | |
|---|---|
| Mode | Power ON |
| Measurement Point | TP562 (pin⑱ of IC561) (SYS CLK) |
| Measuring Instrument | Frequency counter |
| Adjusting Element | RV561 |
| Specified Value | 330 ± 5kHz |

Adjustment method:
1) Adjust to 330 ± 5 kHz with RV561.

### 7-4-2. Clock Precision Adjustment (DI-24P Board)

**Note:** Remove the lens adjustment.

| | |
|---|---|
| Mode | Power OFF |
| Measurement Point | TP566 (pin㊶ of IC561) (CLOCK) |
| Measuring Instrument | Frequency counter |
| Adjusting Element | CT561 |
| Specified Value | 8192 ± 0.04 Hz |

Adjustment method:
1) Turn ON/OFF the POWER switch.
2) Connect TP564 ($\overline{\text{TEST}}$) and TP565 (GND) with a jumper wire. (TEST mode)
3) Turn OFF/ON the POWER switch.
4) Adjust to 8192 ± 0.04 Hz with CT561.
5) Remove the jumper wire.

## 7-5. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

### 7-5-1. Preparations

1) Prepare the 8mm video deck or 8mm video camera with the VIDEO OUT terminal that output signal level is 1 Vp-p (75 Ω terminated).
2) Playback the portion of monoscope on the alignment tape.
   Alignment tape: Operation check
   WR5-5CSP (8-967-995-47)
3) Input the playbacked monoscope signal to Pin③ of W904 on the VF-15P board. (GND is Pin② of W904.)
4) Add 5.0 ± 0.1 Vdc to Pin ① of W904 by the regulated power supply.

### 7-5-2. Horizontal Tilt Adjustment

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation<br>(WR5-5CSP)<br>Monoscope portion |
| Specified Value | See Fig. 7-41. |

Adjustment method:

1) By turning RV904 (BRIGHT), adjust for a luminance level which provides appropriate visibility of yje CRT screen. (Fig. 7-41.)
2) Loosen the DY (deflection yoke) tightening nut. (Fig. 7-40.)
3) Make the image horizontal by rotating DY.
4) Retighten the DY tightening nut. (Do not tighten excessively.)

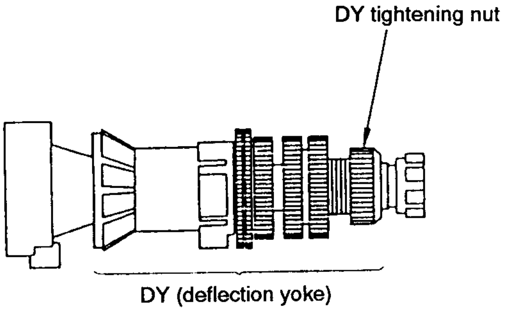
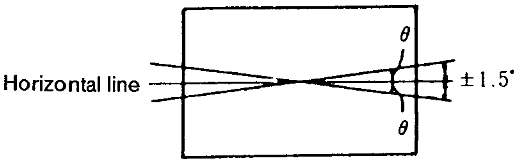

DY tightening nut
DY (deflection yoke)

Fig. 7-40.


Horizontal line
θ
θ
±1.5°

specified value: Image crientation within ± 1.5 ° of horizontal line.

Fig. 7-41.

### 7-5-3. Centering Adjustment

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation<br>(WR5-5CSP)<br>Monoscope portion |
| Specified Value | See Fig. 7-43. |

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-42.)

**Note:** Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

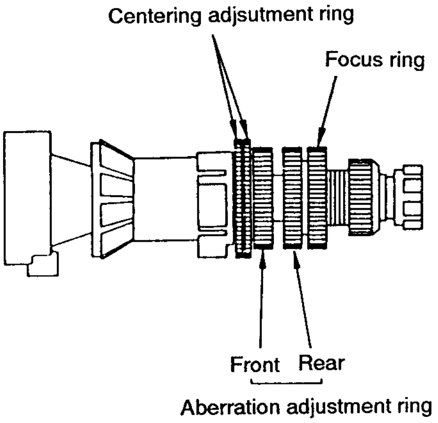

Centering adjsutment ring
Focus ring
Front
Rear
Aberration adjustment ring

Fig. 7-42.

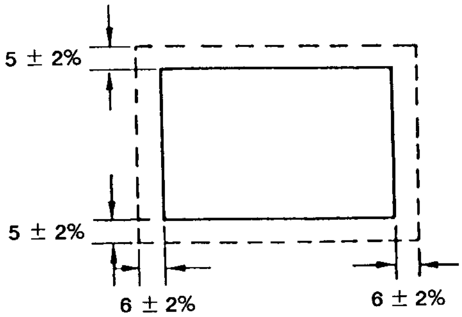


Fig. 7-43.

### 7-5-4. AFC Adjsutment (VF-15P Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5CSP)<br>Monoscope portion |
| Measurement Point | C904 ⊕ |
| Measuring Instrument | Digital voltmeter |
| Adjusting Element | RV901 |
| Specified Value | 2.4 ± 0.05 Vdc |

Adjustment method:

1) Adjust to 2.4 ± 0.05 Vdc with RV901.

### 7-5-5. Focus Adjustment

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5CSP)<br>Monoscope portion |

Adjustment method:

1) Adjust for optimum focus using the focus ring. (See Fig. 7-44.)

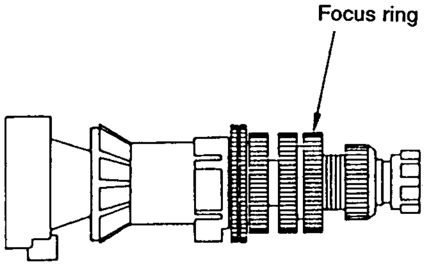


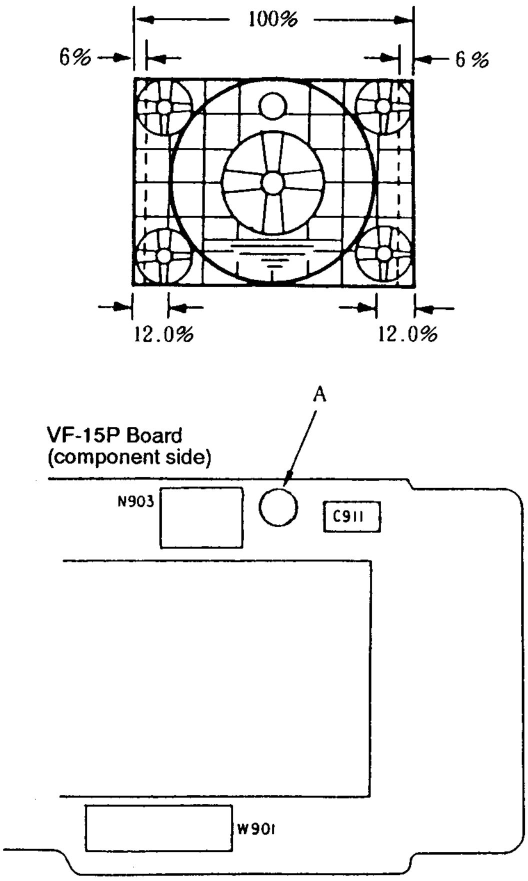
Fig. 7-44.

### 7-5-6. Horizontal Amplitude Adjustment (VF-15P Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5CSP)<br>Monoscope portion |
| Adjusting Element | C911 |
| Specified Value | 12% |

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV904.
2) Rotate RV904 to set the brightness to the normal level.
3) Short or open the pattern (A) of the H size adjustment capacitor (C911) to provide horizontal overscans of 12% (total of left and right). (See Fig. 7-45.)



| A section | H size |
|---|---|
| Open | Small<br>↕<br>Large |
| Short | |

Fig. 7-45.

### 7-5-7. Vertical Amplitude Adjustment (VF-15P Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5CSP)<br>Monoscope portion |
| Adjusting Element | RV902 |
| Specified Value | 12% |

Adjustment method:

1) By turning RV902, adjust vertical overscan to 12%. (upper and lower total)

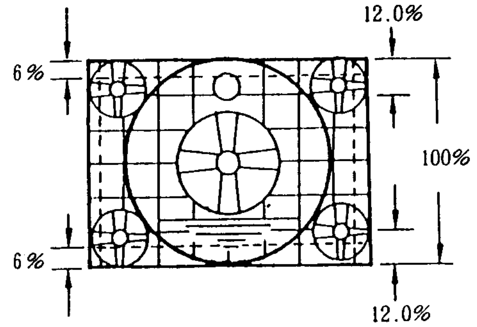


Fig. 7-46.

### 7-5-8. Brightness, Contrast Adjustment (VF-15P Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5CSP)<br>Monoscope portion |
| Adjusting Element | Brightness: RV904<br>Contrast: (B) R929 (C) R930<br>(D) R931 (E) R932 |

Adjustment method:

1) Rotate RV904 to set the brightness to the nomal level.
2) By shorting the adjusting lands (B), (C), (D) and (E), adjust the contrast until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)
   - i) In case of too bright
     Confirm the brightness by shorting the adjusting land (C). If it is still too bright, short the adjsuting land (B).
   - ii) In case of too dark
     Confirm the darkness by shorting the adjusting land (D). If it is still too dark, short the adjusting land (E).

VF-15P Board (component side)

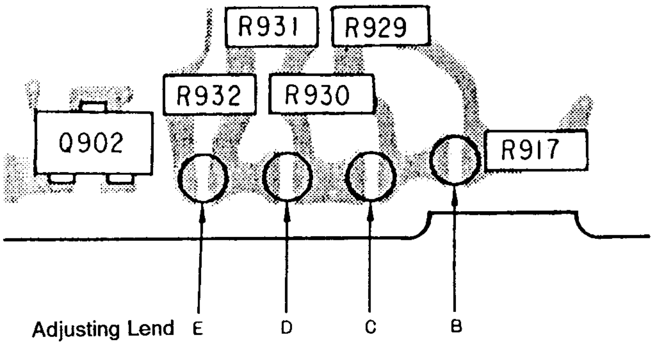
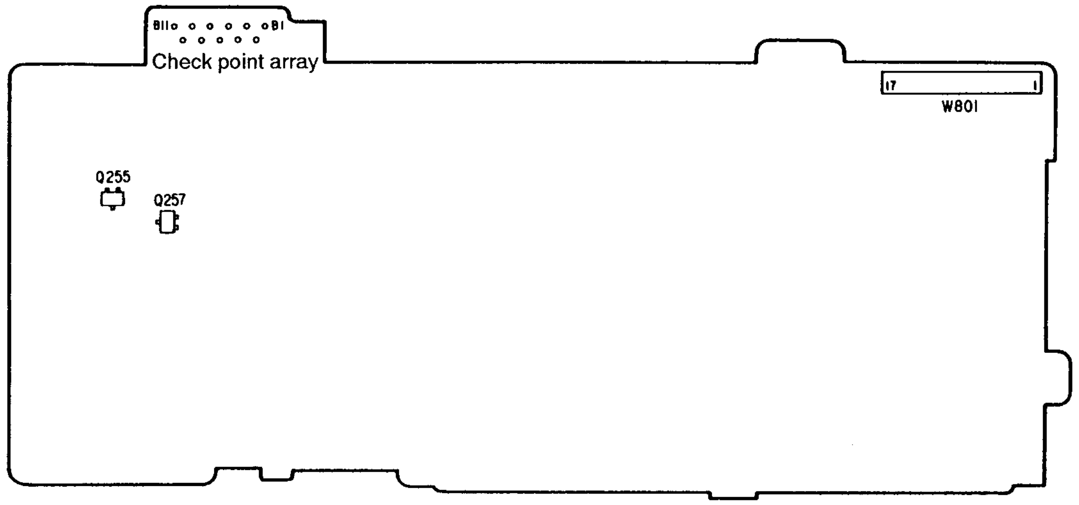


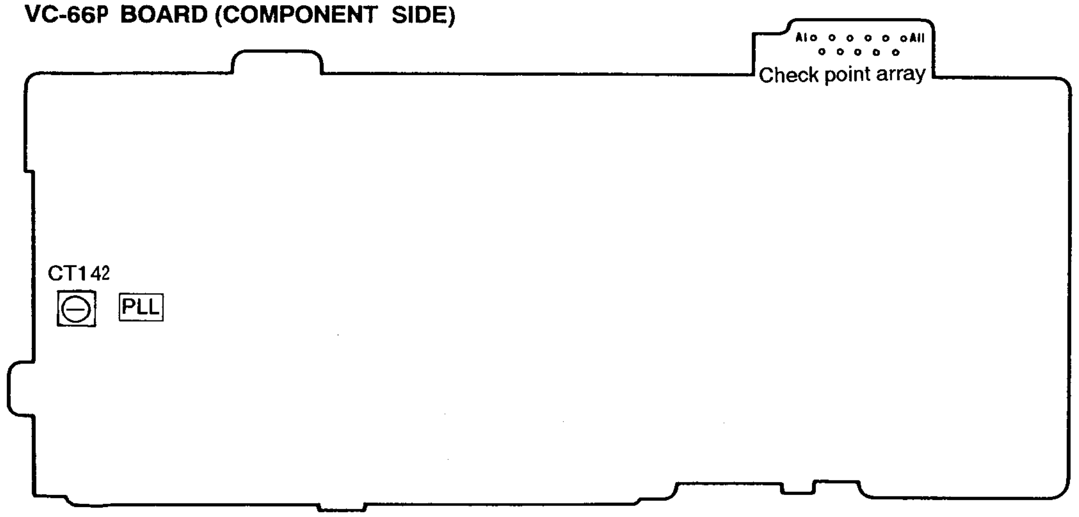
Fig. 7-47.

## 7-6. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

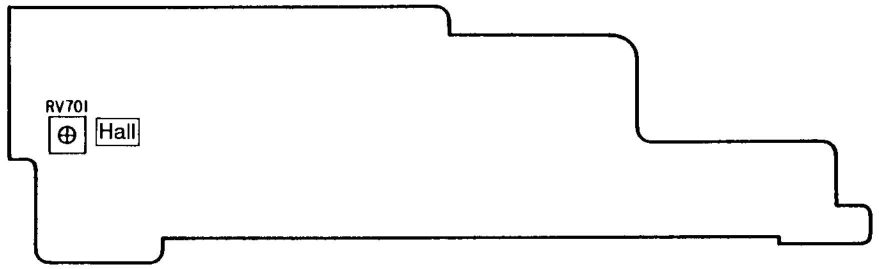
### VC-66P BOARD (CONDUCTOR SIDE)


B11
B1
Check point array
17
1
W801
Q255
Q257

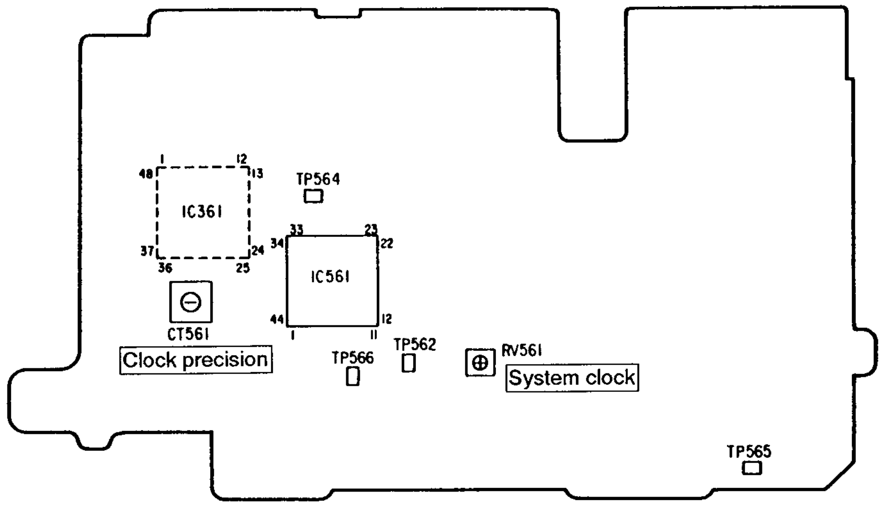
### VC-66P BOARD (COMPONENT SIDE)


A10
A11
Check point array
CT142
PLL

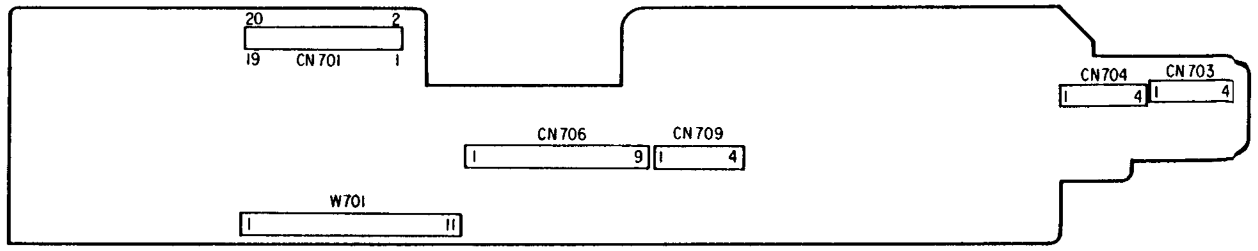
### LD-20P BOARD (COMPONENT SIDE)



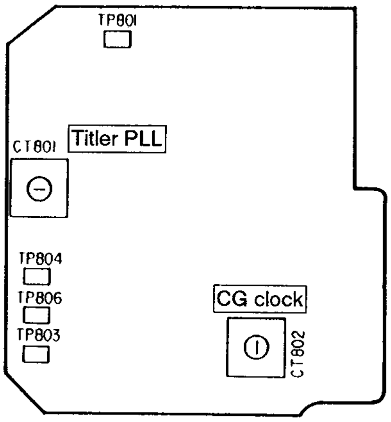
### DI-24P BOARD (COMPONENT SIDE)


IC361
IC561
TP564
CT561
Clock precision
TP566
TP562
RV561
System clock
TP565

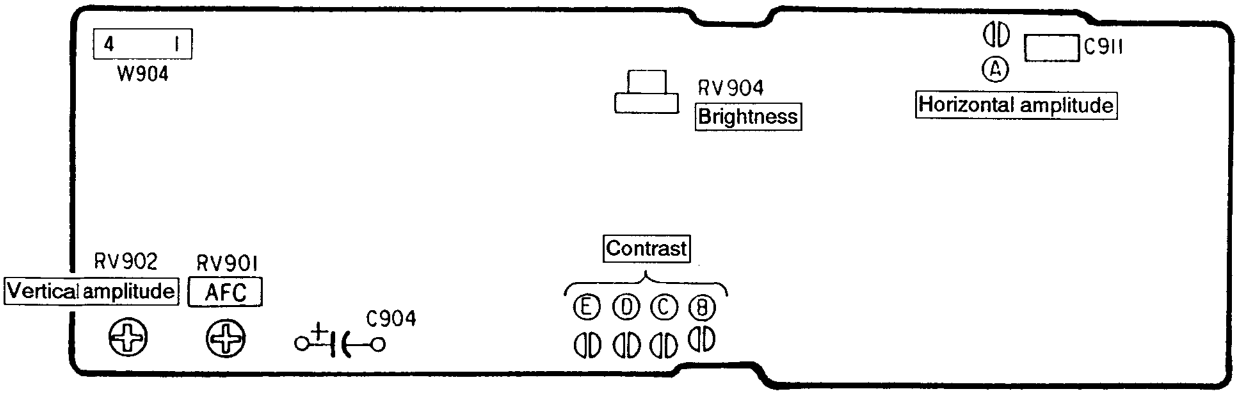
### IN-25 BOARD (COMPONENT SIDE)


20
2
19
CN701
1
CN704
4
CN703
4
CN706
9
CN709
4
W701
11

## TI-20P BOARD (COMPONENT SIDE)


TP801
Titler PLL
CT801
TP804
TP806
TP803
CG clock
CT802

## VF-15P BOARD (COMPONENT SIDE)


4
1
W904
RV904
Brightness
C911
Ⓐ
Horizontal amplitude
RV902
Vertical amplitude
RV901
AFC
C904
Contrast
Ⓔ
Ⓓ
Ⓒ
Ⓑ